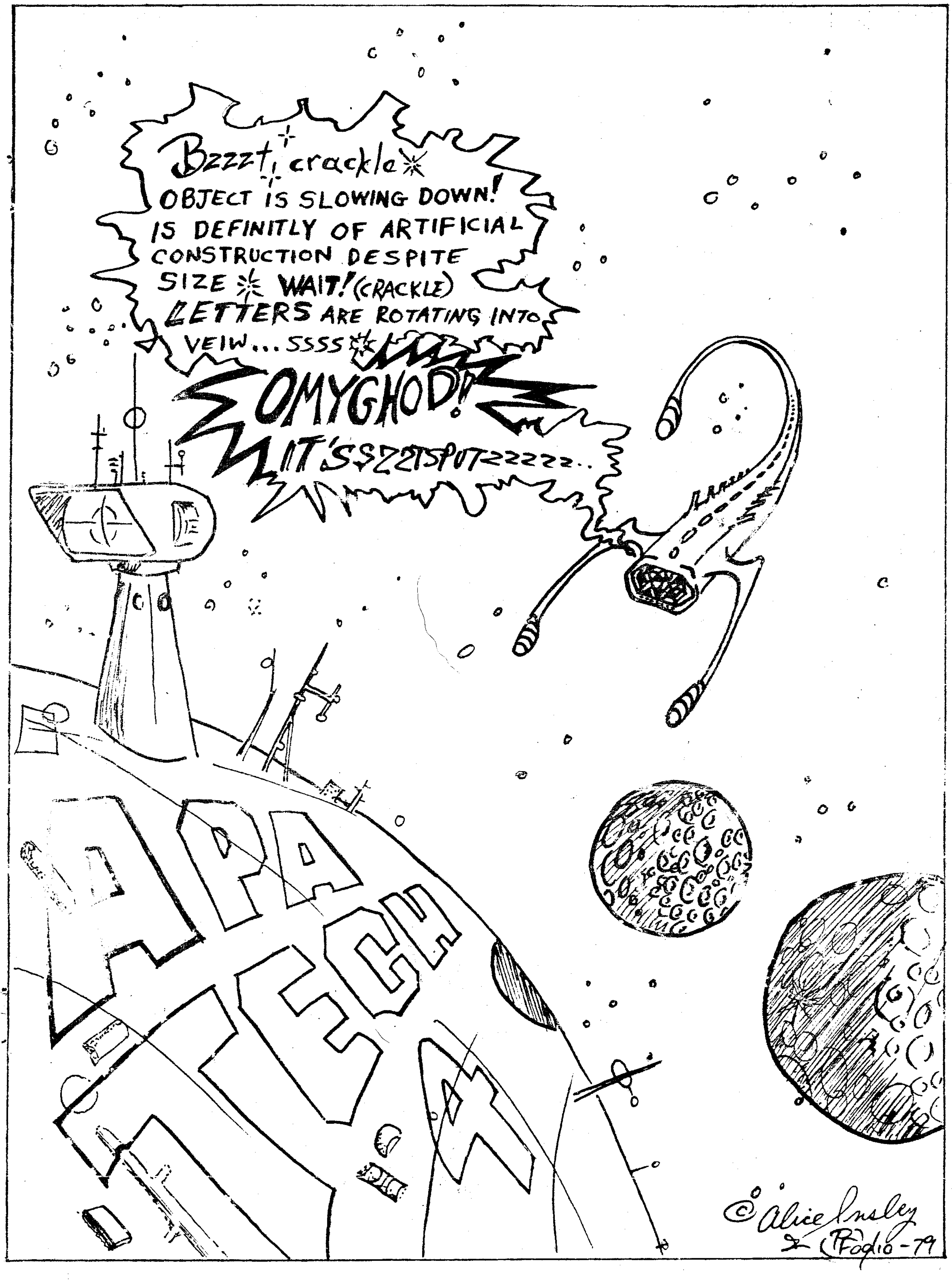
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APA TECH

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APA TECH 00100B December 1979 The 555 Times #4

The Amateur Press Association for and by members of General Technics

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The next deadline is FEBRUARY 1

The Copy Count is 35

YOUR ACCOUNT BEFORE POSTAGE IS \$$3^{30}$

THOSE WHO HAVE BEEN DROPPED: Tullio, Angel, Alex

Those who promised to postmail before February 1 (and thus save their asses): Bentley, Alice, Gordon

Those who owe pages (or will be dropped next ish): Keith, Renee, Rod, Colsher, Clyde

Those who owe money: Bentley, Alice, Greg, Valli, Clyde, Donna, Doug

New Members: Bill Higgins, Jamie Hanrahan, Donna Struwe, Doug VanDorn, Bill Leininger

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STRUGGLING TO GET UP OUT OF THE CHAIR

These past few weeks have been hectic. What with trying to get the last of our company's business finished for the year, attempting to finish making our family's christmas gifts ready Before christmas, and organizing for the New Year's Party, the apa has taken a backseat. For that I am sorry. Time was (and still is) of the essence so my mind automatically went on pre--set priorities. What I cannot be held accountable for, however, is the state of this apa. What's the matter, folks? Three people have dropped (the emergency editor, for one) and three will be booted out unless they postmail. Bad. (Many of you owe pages, too, but you can remedy that in February's mailing). Lots of you owe me money. That's worse. The House of Isher is poor and cannot afford to finance this enterprise. So, according to policy, postcards will be sent to those of you on the list informing you that your money has run out.

I don't want this apa failing before it even gets started. This may sound pessimistic, but consider: 6 people dropped is a loss of 30% of our membership. Someday I'd like to see Apa-Tech as a forum where all the members of GT occasionally come and go, depending upon the current topics in the apa, and whether they have the time or money to be in it. But first we need a solid foundation of regularly contributing members to provide some sort of stability so that the apa does not fluctuate wildly from issue to issue. And that means doggedly turning those pages out once every two months or four months (for those of you, like me, who have to be forced up against a deadline to write anything.)

About that deadline: As you can see from above I have problems with deadlines so I tend to be sympathetic with those who share my affliction. Therefore, I like to leave about a week's time from the due date to allow for post office creep and very slow fingers. If that's alright with the membership, I'll continue the practice. But it's getting ridiculous. Today is the 11th and I received another contribution! I may get strict about the deadline just in spite. Please, don't anger the G.T. ("'You wouldn't like me when I'm angry.'")

Last issue was really fine. We had a good con report from Bill Colsher and some stimulating thought from Mike Setak, Rod Smith and Greg Ruffa. But it's not enough. I want more, more; I'm still not satisfied (now she's raving). I want this apa to become so wondrous and fascinating that people are breaking into our house to steal mailings and are lasering members in their sleep to get onto the roster. I want people begging me to let them into the apa. ~~I want everyone to get their own radio licenses!~~ Keep the good stuff coming in; the apa looks good.

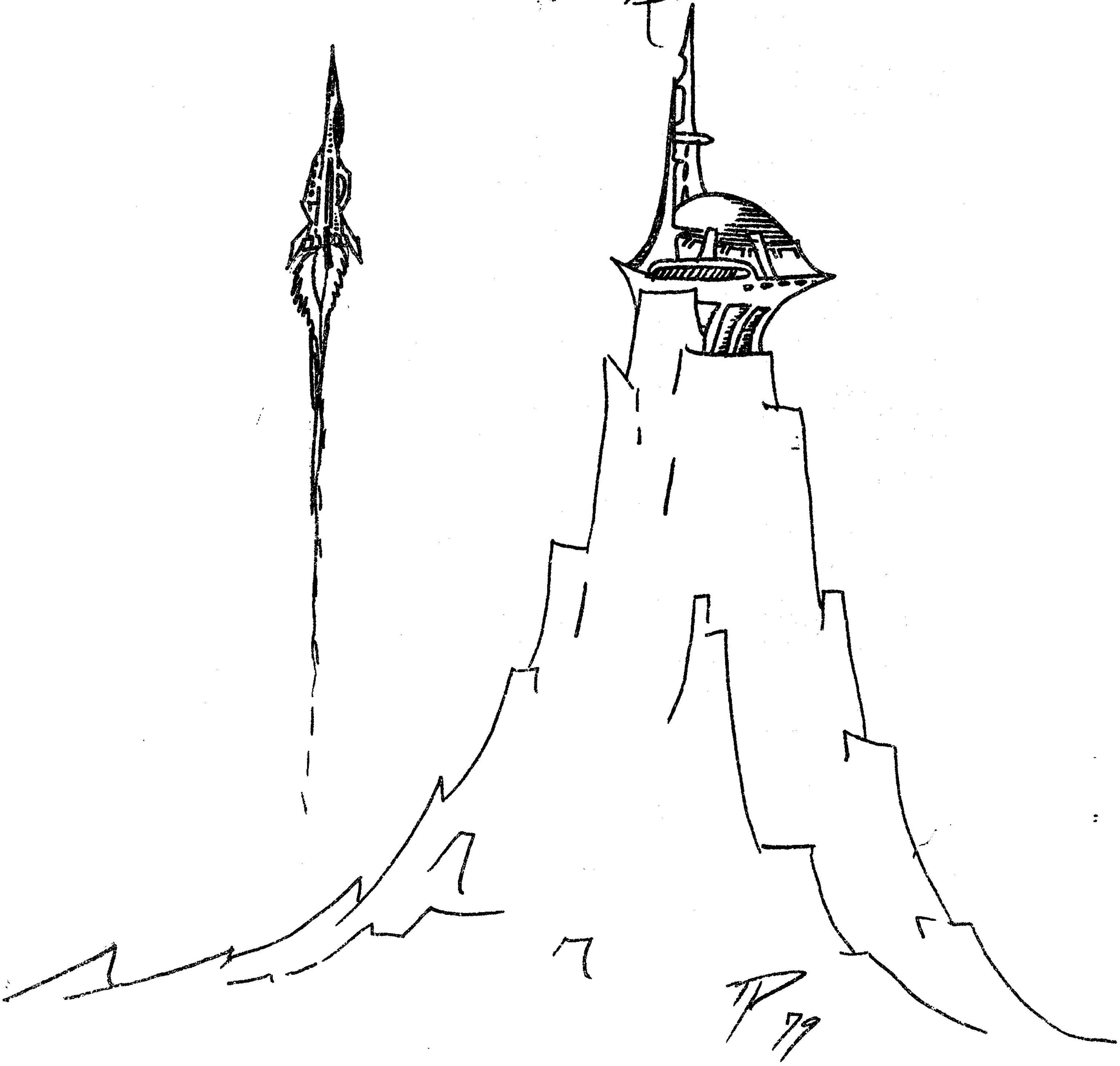
FOR THOSE OF YOU WHO ARE POSTMAILING: To save money, you could hand out your zines at the party and get most of the members. The rest you mail (and that's only 3 or 4).

NOTES ON LAST ISH: For those of you who figured out that the table of contents did not match up with the actual material therein, 2 points. The collation and The 555 Times was done at WindyCon so I was at the mercy of (gasp!) a manual typewriter. Renee is paralyzed without her word--processing computer. The Backcover did not show up in the issue because there were no duplicating facilities of the type that were needed to reproduce it. The One Shot was added as an afterthought (not MY afterthought!) For all later issues the collating, etc. will be done here. There are better things to do at cons than to shuffle papers (then why do we go to eastern conventions?)

OH, AND: Misha (Mike Sestak) has suggested that we change the name of the apa to Apa-ratus. Any seconds to that?

Well, that raps The 555 Times for number 4. Take care of yourselves over the holidays and send me lots of material in February. Happy Haunnakah, Happy Solstice, Merry Christmas, and Happy New Years. See you at the party!

Renée



Singularity: Two

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This being the second of the submissions of the type Singularity to be followed by a numeral of the alphabetic form authored by Steve Johnson in the immediate vicinity of 2428 N. Summit, Columbus, Ohio, 43202, and accessible at most times of the day at one or more of the following number sequences used by common carrier communication networks {614-263-0884 ¦ 614-263-1935 ¦ 614-868-7816} the last being at the locus of pecuniary remuneration and the former being at the domicile of all parties concerned.

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Whew! Where to begin... I've so much to talk about. Apa-tech is VERY impressive; much more enjoyable than other APAs I've seen. Perhaps it's because I know most of the people in it, or because of the traditional reason (egoboo), etc. So many literate people (ask someone on the street who Joseph Conrad is and they'll likely tell you that he's that fat actor who played in a detective TV show a few years back, not the author of "Heart of Darkness" and other dark and beautiful stories)! More on that later...

The job is not quite as nice as I expected but nicer in ways that I hadn't forseen. The technical library facilities are really respectable - much of the mass driver information has come from them through literature searches courtesy of their research librarian who is kind of fannish. Such retrievals are a matter of course with them - I just went in, sat down, and asked for papers on mass drivers, and they've started to arrive, a few at a time, from branch libraries all over the country.

What's this about mass drivers? I hear you mutter. If you were at Windycon you may have heard Bill Higgins and I and a few other people talking about magnetic mass drivers (similar to the ones described in Robert Heinlein's "The Moon Is A Harsh Mistress" and elsewhere). The idea of building one is not new - one was built at M.I.T. two years ago. The construction of the M.I.T. mass driver cost a total of about $500 - about the same as the parts for Joe [the robot]. We can probably scrounge the vast majority of the parts if we (GT as a whole) decide to build one, which brings up a question: How many of you are interested? This interest can manifest itself in many ways from being intellectually curious about mass drivers in general (which itch I can resolve through distribution of copies of the journal articles or bibliographies) to wanting to wind coils and build high-current power supplies, or anything in between.

I. Should we merely reproduce the M.I.T. effort?

II. Should we attempt a different sort of driver (see the enclosed article)?

III.–Who can provide scrounge?

IV. Who can provide machine-shop facilities and time?

V. Who can provide the physics we need for the theoretical aspects of the project?

VI. Who can provide the literature searches?

VII. and on and on and ...

One thing this project will certainly need is a lot more coordination than the robots, which could be done by three or four people. If a number of us do machining independently, plans have to be well-enough defined so that parts will fit together as they should, power supplies match power supply requirements, and other things I haven't even thought up yet. I do believe, however, that we're capable of doing a long-term project like this; all we need is constant, fast communication. This is something that I can take care of at least - especially if you have access to dial-up terminals (UNIX is a wonderful thing; sufficiently wonderful to call dial-up terminals and not charge me for long-distance calls).

So please write to me or Bill if you are interested, and we'll start to organize an effort (his address is: W. Skeffington Higgins, Fermi National Accelerator Laboratory, P.O. Box 500, Mail Stop 220, Batavia, IL 60510).

Corner me the next time you see me and I'll tell you of the wonders of UNIX, and how a $250,000 computer system can be used as a smart terminal for anything you please.

nts..Comments..Comments..Com

As I said before, I'm very impressed with Apa-Tech. The first one seemed a little weak, but that's to be expected. The second one was quite good, as is the third. I was apprehensive at first about Apa-Tech - although now I realize my apprehensions were unfounded.

Cover

Da Cover, It's - a verry, verry nice...

Something Else Again

Neat - Stream of Consciousness through NASFiC... Almost makes me feel I was there (wish I had been). The idea of purchasing ice is repugnant to me. Why weren't runs to the Galt House's equivalent to the Fountainbleau's Mother Lode ice machine made?

Bill - now that D.G. has really gone, what are you and I going to do with our systems? Anyone out there want to buy TWO Digital Group computers?

Y.A.A.i.t.S.S.

I meet people all the time who are enthusiastic about the space program and wish it would resume - virtually anyone who has an opinion supports it (although I admit my sample is undoubtedly skewed since I hang around engineers and scientists all the time). If only the idiots in the Capital could see what is so clear to so many people... Perhaps we may again see a temporary reversal in entropy with Truax, if he can ever get his project off the ground...

Clapping Mesklinite

You and I disagree about many things, Renee, but I agree with you about Dave Powell - he's a great person. After Jerry, Carol, & I moved into the new apartment, Dave started stopping by a few times a week, and soon became involved in the work we were doing on the place (like re-wiring the electricity so as not to burn the place down while running the computer). He has put in as much or more work on the place as any of us, and remains constantly good-natured, cheerful, and enthusiastic. He'll be moving in with us as soon as the harvesting at his family farm is done. I've met few people as competent and pleasant as he is, and hope to develop our friendship further.

One of our more controversial topics of discussion, Renee, is (as you see it) my impending departure from fandom. I still claim that I can safely negotiate the border between GAFIA and FIAWOL and remain in fandom. Virtually all my friends are fans; and there are married couples in fandom who manage to stay in with varying degrees of success. I personally believe that I can do it, and I certainly intend to do so.

Dick's Glowing Typewriter

An operating system named Duress? 'that's not funny - that's sick!' The job sounds nice, although commuting from Mount Prospect is undoubtedly a real pain.

You notice that I've since thrown over my venerable Smith-Corona for a Diablo terminal - just couldn't figure out a cheap interface between a 1937 Manual and a PDP-11/45.

The One Shot

(strange!)

Tails (oops - Tales) from the Charmed Sea

I agree with you about 'Life of Brian.' I thoroughly enjoyed it - especially the Latin spelling lesson - brought back fond memories of Father Janus' Latin classes in High School. He didn't have a sword, but the students felt just as uncomfortable. What beautiful BEMs! Someone HAS to do one of them for a masquerade. The group that I went with to see the film all left the theater whistling - the next group in line really thought we were strange. We carried in our dinner - Arthur Treacher's fish & stuff - a girl in the next row up suggested that the next time we call out for a pizza and have it delivered to the theater. The idea has a certain appeal...

As far as Buck Rogers goes, I think that Tullio's electronic ash-trays have more personality than Dr. Theopolis, and a fire-plug has more personality than Twiggy "Dee-dee-dee-dee-what-a-turkey."

Transporter Topics

Wow! An ancient Environmental Protection Agency throwing up a protective cloud layer...the civilization falls, producing a long dark-age...The climatic instability caused by the ever-present clouds eventually causes a long drought, then an ice-age, effectively obliterating all remains of the ancient civilization...the only vestige of the ancient ones remains in the mythos of their descendents...I like it! I like it!

Nice illustration. Where is it from and what is it really?

The Quintessential Singularity

Don't worry, Greg - the similarity in our titles is merely coincidence brought about by synchronicity.

I really enjoy your writing style - also, it's been a long time since I've seen anyone do an interesting derivation in an APA (come to think of it, I've never seen any derivations in APAs).

Wow...

I just got myself a cat. Purely on impulse, you understand, but a cat nonetheless. Carol and I attempted to find an appropriate name for her, but she soon found one all by herself. I was holding her in my arms while walking down the stairs from the second floor, and she launched herself into space, all four paws outstretched. "Ahah! 'Astro' would be a good name..." Carol heard me and suggested Astrophe, and so she has been named Cat...Astrophe. She's a persian - mutt cross with deep blue eyes, and only eight weeks old, and gets along well with Carol's cat, "The R. P." (Which Carol claims stands for "Real Pussycat" but which really means "Royal Pain"). Carol promises to do all the appropriate medical things to the cat (i.e. spaying, etc.), but also promises not to do it on the kitchen table as is her custom with friends' and neighbors' cats that she works on.

Carol has introduced me to another new hobby - stained glass. She picked it up while staying in Bethesda, MD. while working at N.I.H. last summer from the people she was staying with. I'm sure you'll see some of her stuff at future art shows, and in our windows at home. Mostly fantasy and/or cat oriented, with an occasional straight SF piece (i.e. the Ganymede/Jupiter piece she gave me for my birthday). It's nice to have something else we can both do together...

Anyone who likes oriental food is urged to visit us in Columbus and stop by Crestview Food Town, only 6 blocks away, which is run by an elderly Chinese couple and their children and their children... You will see some of the strangest things, including Japanese dried and salted fish, 139 varieties of noodles, canned shark-fin soup, and on and on. We've just recently paid our first visit to the place at the reccommendation of other Oriental food lovers. I didn't recognize about 2/3 of the stuff.

Well, until the next con or the next Apa-Tech...

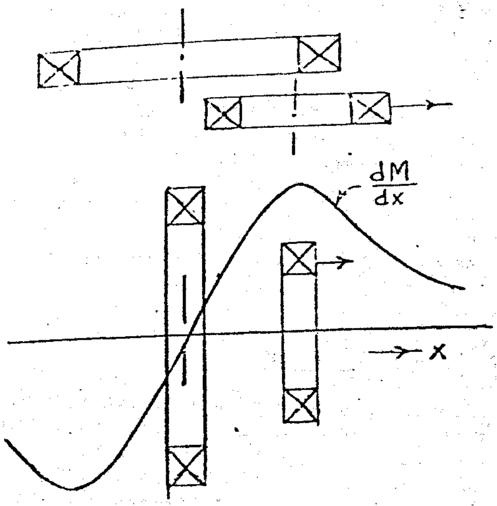

Fig. 1: The mutual inductance gradient as a function of drive coil position, for planar and axial mass drivers; see ref. 5.

length depends on the ratio of bucket to drive coil radii in the manner shown in Fig. 2; it is typically about equal to the drive coil radius for mass drivers designed previously. For optimized performance, the oscillating current in the drive coil must resemble the quasi-sinusoidal variation of dM/dx as a bucket passes a drive coil. It is this requirement which imposes the only velocity limitation on a mass driver. In a four inch caliber mass driver accelerating to 20 km/s, for instance, the final drive coils would have to oscillate at a period of 20 microsecond, which is quite reasonable. Substantially higher velocities would require excessive capacitor voltages.

The magnitude of the mutual inductance gradient, or the amplitude of its variation in Fig. 1, represents the coupling coefficient, or the degree of inductive coupling between bucket and drive coils. It depends on the effective bucket to drive coil diameter ratio, which is generally denoted by alpha in mass driver literature. The effective diameter of each coil is not its inside or outside diameter, but the diameter of the equivalent current filament, or the diameter of the center of mass of the current distribution in each coil. This dependence is shown in Fig.2.

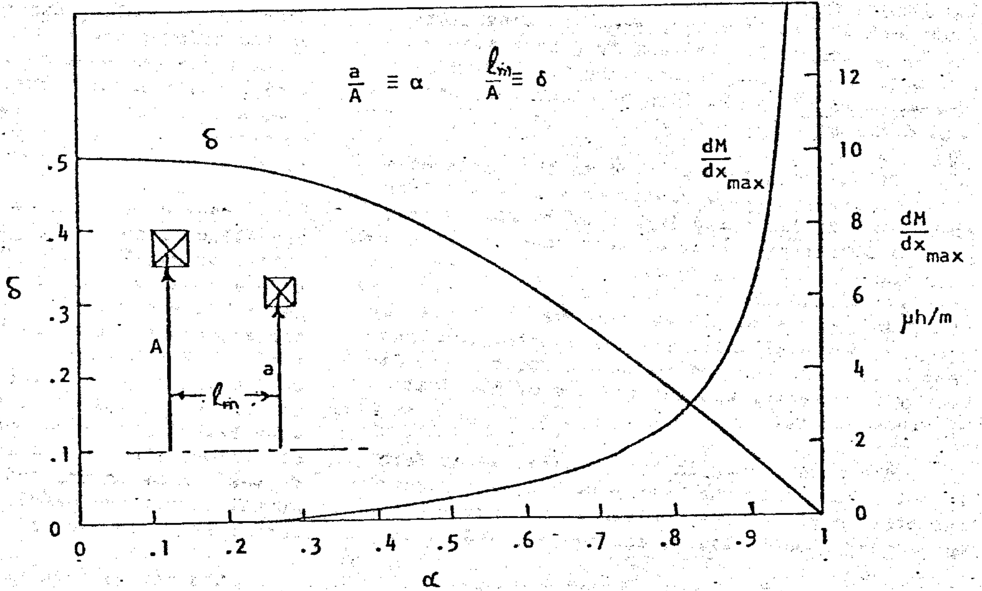

Fig. 2. Maximum inductance gradient $(dM/dx)_{max}$ and normalized inductance length δ (maximum thrust position / drive coil radius) as a function of the diameter ratio a/A = α.

These circumstances explain certain scaling limits. Mass drivers designed previously[6] with calibers in the four inch range had diameter ratios (alphas) slightly better than 0.5. Values as high as 0.75 can probably be achieved in the twelve inch caliber range, due to fixed clearance requirements. On the other hand, diameter ratios become worse if one attempts to increase the acceleration by making the drive or bucket coils fatter, because the current centroids are then separated by a greater distance.

There is a lower limit to the scale-down of mass drivers; a one inch diameter bucket, for instance, is unthinkable. It would have too small a volume-to-surface ratio to permit reasonable thermal inertia, a problem further aggravated by the lack of sufficient space to adequately insulate the superconducting coils from their surrounding radiation shields and from the payload; mechanical supports would simply be too short to reduce conduction losses by the available techniques of cryogenic design. The practical lower limit to size might lie in the vicinity of two inch caliber.

The fact that four inch caliber mass drivers with the poor coupling coefficients corresponding to an alpha ratio of 0.5 have electrical-to-mechanical energy conversion efficiencies as high as 90% reflects a unique and very important characteristic of mass drivers. Most of the magnetic energy in a drive coil which is not used as mechanical energy (due to poor coupling) is returned to the capacitor, and only a small fraction of it is lost resistively in the drive coil. The poor coupling coefficient therefore affects only this relatively small loss. In the case of commutating dc motors discussed later this is not the case, and the alpha ratio becomes very much more crucial.

An intimately related property of mass drivers is their ability to use the energy storage capacitors over and over again to charge hundreds or even thousands of drive coils during a single [illegible] The number of times a capacitor can be [illegible] limited in practice only by the length of [illegible] feeder line required to connect it to even more [illegible] coils. Eventually it becomes more expedient to distribute a number of additional capacitors along the mass driver and to connect each only to a small number of nearby drive coils. In view of this property, mass drivers can store the launch energy in a primary storage device which is much less expensive and less bulky than capacitors, such as homopolar generators or chemical MHD converters.

Limitations of the mass driver are inherent in its complexity. Calibers much below four inches are not practical for reasons stated above, and the structural complexity of cryogenic buckets limits acceleration to the order of 1,000 g, imposing length requirements in the range of several kilometers. This is quite acceptable for fixed-base lunar or terrestrial launching operations, but poses severe dynamic stability problems in the case of reaction engines.

A question raised with sufficient frequency to merit specific attention is whether a mass driver could be used to accelerate cheerio-sized, expendable superconducting rings to the range of several hundred km/s required to initiate impact fusion. Two circumstances conspire against such a scale-down. As mentioned above, alpha values become very much worse, probably below 0.1. The resultant poor coupling coefficient then imposes prohibitive drive coil current requirements to achieve a given thrust. This will of course also increase the resistive dissipation to the point where efficiency may be unacceptable. The second scale-down problem involves the time domain and is even more serious. The small inductance length of about 0.125 inch (which will also be the coil spacing) requires a drive coil discharge period of about 0.13 microsecond at the 100 km/s velocity point, and generating such fast-rising pulses of sufficient power content requires unrealistic capacitor voltages, particularly considering the very small drive coils into which these capacitors must discharge.

3. The Railgun Family

The Classic Railgun

In many respects, the railgun is the accelerating mechanism diametrically opposite the mass driver. It is also the most highly perfected scheme for achieving hypervelocities. A railgun is nothing more than two parallel rails connected to a source of direct current, the projectile consisting of a short-circuit slide propelled between the rails by the Lorentz force $F = BLI/2$, where B is the magnetic field intensity between the rails in Tesla, L is the length of the current path through the short-circuit slide, or the gap between the rails in meters, and I is the current through the slide in amperes. The factor of 1/2 accounts for the fact that the field is B behind the slide, but zero in front of it, and therefore the average field is just B/2.

The thrust force can also be expressed as $F = L'I^2/2$, where L' is the inductance per unit length of the rails. L' has a typical value of 0.3 microhenry/meter for a gap width to rail height ratio of 1/3; it is relatively insensitive to this ratio, and is independent of scale size. Railguns have been studied extensively by Brast and Sawle of MB Associates in the mid sixties under NASA contract⑮, and more recently by Marshall and Barber(16,17), using the world's largest homopolar generator at the Australian National University in Canberra which is capable of storing 500 MJ.

Railguns can operate in two distinct modes. In the metallic conduction mode current flows through the sliding projectile itself, and in this mode performance has been demonstrated up to 1 kg mass and 2,000 g acceleration by the switching gun used in the Canberra installation, to switch current into the main gun. Marshall and Barber found that if the railgun is driven very hard, a plasma arc tends to bypass the projectile, leaving it behind. By using a non-conducting lexan projectile and confining the arc so that it cannot bypass the projectile they were able to achieve a performance level of 16 grams accelerated at 250,000 g along a 5 m barrel to a final velocity of 5.9 km/s. The distinction between brush conduction and arc conduction is likely to vanish in the sense that brush conduction will be supplemented by an arc as the limit of brush conduction current density is exceeded. The practical limit of railgun performance in terms of projectile size, acceleration, length and final velocity will have to be explored by progressive refinement of materials and engineering details as in the case of any new technology. An effort is about to begin at the Westinghouse Research Laboratory in Pittsburgh to extrapolate the Canberra work to a projectile size of 0.3 kg, accelerated to 3 km/s㉓.

The advantages of the railgun are clearly its simplicity and acceleration capability. The most fundamental limitation is inefficiency due to loss of inductively-stored energy in the form of a muzzle arc at the instant of launch. In a repetitive launching operation it might be possible to recover some of this energy by capacitive storage, but not more than about half. To a great extent the applicability of railguns will depend on acceptable mass and service life. Main problems involve mechanical containment of the percussive expansion forces which tend to blow the rails apart, and the destructive effect of high brush current density and the related metal vapor arc. The body of knowledge available from the study of brushes and circuit breakers does not extend to the current densities and velocities in question.

The railgun is in essence a single-turn motor, and needs to be energized from a source of high current, at a voltage which increases with velocity. The most expedient scheme is to store the energy inertially in a homopolar generator, then to transfer it to an intermediate inductor over a period of several milliseconds, and to open-circuit the inductor across the railgun as soon as the current culminates. The equipment involved is not unreasonable if one accelerates small projectiles at high repetition rates. Recent advances in the design of homopolar generators and compensated alternators(18,19,20) are highly applicable. As a railgun is lengthened, the resistance and inductance of the rails eventually absorb a dominant fraction of the energy. The effect results in a velocity saturation, which is seen to begin at about five meters length in the Canberra tests.

Another fundamental length limitation is the increasing back-emf with velocity. The intermediate energy storage inductor will ensure continued current flow even when the back-emf exceeds the output voltage of the homopolar generator, but there is a practical limit to the voltage which can be stood off by the gap between rails, which implies a practical velocity limit depending on scale size. There are several schemes for circumventing the limitations of the classic railgun.

The Augmented Railgun

The magnetic field between the rails of a railgun can be augmented by supplementary current which does not flow through the sliding brushes. This supplementary current can be carried by separate conductors flanking the rails (which must of course be farther from the projectile), or it can be added to the rail current itself by simply terminating the rails with a load resistor or inductor at the muzzle to carry a fraction of the current. The rails themselves will obviously contribute more field than auxiliary rails located farther away, but the use of superconducting auxiliary rails might be expedient in some applications. It should be noted that rail gun fields are much higher than the fields superconductors can withstand. Augmentation has the additional effect of reducing the amount of current flowing through the brushes and the projectile, and thereby reducing the necessary conductor mass which must be accelerated.

It should be noted that the augmenting field is twice as effective as the rail field itself. The augmenting field prevails in front of the projectile as well as behind it, and therefore the factor of one half in the Lorentz force expression is eliminated as far as the augmenting field is concerned. This fact is important inasmuch as it reduces to one half the rail bursting force which must be contained for a given acceleration.

Augmentation therefore ameliorates both the brush current density limitation and the bursting force containment limitation of the classic rail gun.

The Segmented Railgun

The length limitation imposed by rail resistance, rail inductance, and excessive back-voltage can be circumvented by simply subdividing a long railgun into shorter segments, each fed by an independent local energy source. This will of course involve certain commutation problems as the projectile transitions between segments, but will permit using part of the energy stored in each segment to energize the subsequent segment. The segmented railgun seems promising for launcher applications involving large masses and relatively low accelerations. In very large launchers, the use of multiple independent energy supplies will have certain other advantages as well.

The Helical Railgun

The classical railgun is in essence a single-turn motor. A multi-turn railgun would reduce the rail current and the brush current by a factor equal to the number of turns and thereby circumvent two of the most stringent limitations. It therefore seems worth while to investigate a hybrid between the railgun and the mass driver, which might logically be called a "helical railgun".

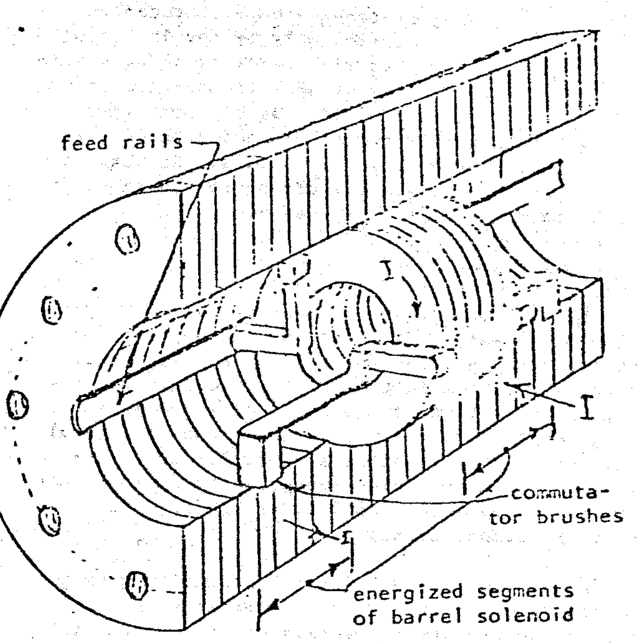

Fig. 3: The helical railgun

In the helical railgun, shown in Fig. 3, the two rails are surrounded by a simple helical barrel which is logically constructed in the manner of a Bitter solenoid, a structure used to contain the world's highest continuous magnetic fields at the MIT National Magnet Laboratory. The projectile or re-usable bucket is also helical, and is energized continuously by two brushes sliding along the rails. Four additional brushes on the bucket serve to energize and commutate several windings of the helical barrel immediately in front of and behind the helical bucket, at a distance of about one inductance length. The barrel windings behind the projectile must be energized in the direction opposite the bucket coil (bucking direction) so as to generate a repulsive force, while the barrel windings in front of the bucket must be energized in the same direction as the bucket coil in order to generate an attractive force. The number of barrel turns which can be effectively energized at one time are limited to the region within which the mutual inductance gradient has an appreciable value, and this circumstance again precludes calibers less than about four inches.

In certain fundamental respects the helical railgun resembles Mass Driver One, the model demonstrated at the 1977 Princeton Symposium. It had a rail-fed, normal-conductor bucket propelled in the push-only mode by SCR-switched, discrete drive coils energized from electrolytic capacitors. The helical railgun also has a rail-fed, normal conductor bucket, but it is propelled in the pull-push mode by a directly commutated, continuous drive helix energized from a continuous or single storage source of *direct current*.

The dominant limitation of the helical railgun will clearly be the as yet unexplored brush problems at very high speed, and the heat input to the bucket coil. In comparing the helical railgun with the mass driver for any application, the crucial question to answer is whether the railgun can develop sufficient acceleration to achieve the required velocity before its bucket melts. If it can, then one will have to consider whether the railgun's advantage of shorter length and decreased complexity will outweigh the mass driver's advantages of much higher efficiency and virtually indefinite service life.

To develop an intuitive feel for the comparison it is useful to consider that for periods less than about one tenth second one can pass higher current densities through normal conductors than through presently available superconductors, which can carry, conservatively, 25 kA/cm^2. At an acceleration of 250,000 g, the Canberra record for 16 gram payloads, one tenth second would suffice to reach 250 km/s, if the railgun could be made 12.5 km long (by using several sections in series). Such extreme acceleration is not practical for large payloads, but the example serves to emphasize that accelerators involving normal conductor buckets definitely deserve serious attention.

4. Superconducting Slingshots

There is a family of accelerators which permit utilization of superconducting energy storage without the need for direct physical connection to the superconductor. Consider a short superconducting solenoid which is free to slide inside a long one. The travelling solenoid will be either attracted to or repelled from the center of the long solenoid, depending on the relative current directions in the two solenoids. Either configuration can serve as an electromagnetic slingshot. In the attractive configuration the travelling solenoid would serve as payload-carrying bucket. Released at the breach end of the barrel coil, it will accelerate to the center where the payload will be released at the maximum velocity, come to rest at the muzzle end of the barrel coil, and then return empty to a position short of its release point, from where it can be returned to the release point by thermally derived mechanical energy. The oscillation is inherently loss-less.

In the repulsive configuration, the travelling solenoid will be moved by mechanical force to a point just beyond the center of the barrel. When released, it will be expelled from the muzzle end as part of the payload.

Magnetic slingshots will only attain velocities of several hundred m/s, but they can serve as the input stage of a momentum transformer, to be described later. Most important perhaps is the fact that slingshots permit using thermally derived energy without the need for conversion or storage in electrical form. Slingshots can operate as simple heat-engines.

5. The Superconducting Quench-gun

By successively quenching a line of adjacent coaxial superconducting coils forming a gun barrel, it is possible to generate a wave of magnetic field gradient travelling at any desired speed. A travelling superconducting coil can be made to ride this wave like a surfboard. The device in fact represents a mass driver, or linear synchronous motor, in which the propulsion energy is stored directly in the drive coils. The quench gun represents another concept in which superconductively stored energy can be transferred directly to a bucket without the need for contact leads.

It should be possible to make the quench-gun self-synchronizing by using the field of the travelling coil to trigger a quench when it reaches the proper position with respect to each individual drive coil. As in the case of the mass driver, the travelling coil is exposed to a constant field and field gradient. It is subject to an abrupt field change only at the instant the first drive coil is quenched. If necessary, the rate of fall of the initial field can be slowed down to avoid quenching the travelling coil.

The quench gun shares various other attributes of the mass driver: it can be guided without contact by induced repulsion forces, it has no fundamental limit of length, and no practical limit of speed. It can also be realized in planar rather than axial configuration if expedient. In many respects, the quench gun represents the accelerator of ultimate elegance.

6. The Momentum Transformer

A novel concept is what we shall call the "momentum transformer". It makes use of a so-called "flux concentrator", first investigated by Howland[21] at MIT Lincoln Laboratory in 1960. A flux concentrator is simply a conducting cylinder with a funnelled bore, and one or more radial slots extending from the inside to the outside surface, as shown in Fig. 4. The cylinder is surrounded by a pulsed field winding, preferably imbedded in a helical groove to minimize hoop stresses on the winding. A fast pulse current in the winding induces an opposite image current in the outer surface of the cylinder. Due to the radial slot, this induced current is forced to return along the inner perimeter of the cylinder, thereby generating a magnetic field in the funnelled bore. All of the magnetic flux which would have passed through the pulsed coil in the absence of the flux concentrator is thus compressed into the central bore, resulting in a field intensity higher than it would have been without the flux concentrator by about the outside-to-inside cross section ratio. The

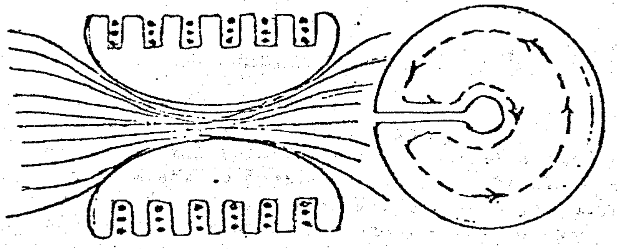

Fig. 4: The Flux Concentrator.

device was used at MIT for high field research and also for industrial metal forming. In 1956 Chapman[22] used a flux concetrator with a tapered bore for accelerating milligram metal spheres to hypervelocities. Using a first stage explosive flux compressor, Chapman managed to reach peak fields in excess of 7 megagauss, starting with an initial field of only 40 kilogauss.

The momentum transformer proposed here uses a non-destructive flux concentrator as the armature of a first stage accelerator. It can be driven to moderate velocity by a chemical or direct solar thermal cycle, or it may represent the armature of a superconducting slingshot operating in the oscillating mode.

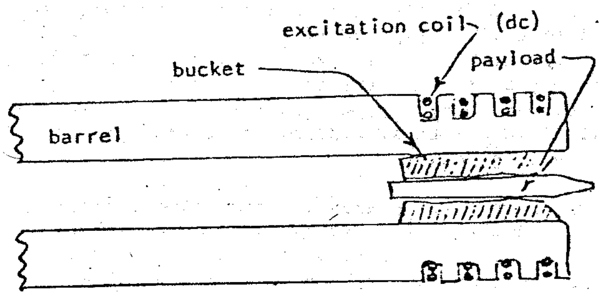

Fig. 5: The momentum transformer

As shown in Fig. 5, the flux concentrator contains a much smaller projectile, which represents the payload or reaction mass encased in a conducting cylinder. When the concentrator enters a region of stationary field generated by an excitation coil and contained by an external conducting cylinder (the barrel), it compresses the prevailing flux into its interior and thereby expels the payload cylinder at a much higher velocity. A large fraction of the total kinetic energy is transferred to the payload. It is essential that the excitation coil be energized with a pulse sufficiently slow to penetrate the outer containment cylinder, and that the armature enter at sufficiently high velocity to prevent flux from penetrating very far into eitherthe outer containment cylinder, or the body of the armature. That is to say, the effective pulse period must be short enough to make the skin depth small compared to the deimensions of the metal cylinders.

The flux concentrator could operate like a primary piston, oscillating back and forth through the expulsion field under the action of a superconducting slingshot solenoid. Both payload and launch energy are supplied to the piston at the breach end of the barrel as each oscillation cycle begins.

7. Impulse Accelerators

An ordinary induction motor is characterized by a slip frquency, or a slip velocity between the moving rotor (slidor) and a rotating (translating) magnetic field structure generated by the stator. For example, a snowmobile with magnets attached to its treads would be propelled along a frictionless metal surface by induced drag in a manner analogous to the propulsion of a canoe paddle or a paddle-wheeler: in both cases propulsion requires slip velocity which involves energy dissipation. An induction motor used unsuccessfully for missile launching in Germany during WW-2 was based on a conducting cylinder exposed to the travelling field inside a line of drive coils much like those of a mass driver. Dissipation in the missile caused it to melt before a significant velocity had been reached.

Ther exists a second family of induction motors, however, which operate in a synchronous manner analogous to a surf-board rather than a paddle-wheeler, and which differ in a fundamental way from ordinary induction motors. Synchronous induction motors involve no slip and require no dissipation: they will work with superconducting rotors or slidors, while ordinary induction motors will not. The fundamental process is exemplified by a brass washer placed at the mouth of a pulsed field coil: it will be propelled by an impulse when the coil is pulsed. The process an be repeated periodically. A line of pulse coils such as a mass driver will propel a bucket consisting of a short-circuited ring if each coil is pulsed at the proper instant. The device can be described as a synchronous induction motor, or an impulse accelerator. Mass Driver Two[24] represents an extreme case of impulse accelerator: current is induced into the short-circuited superconducting bucket coils by the charging station, and all of the subsequent drive coils react against this initially induced current. The decay time of the induced current is essentially infinite.

If the bucket of a mass driver has normal conductor coils which are short-circuited, the decay time of induced current is governed by the resistance-to-inductance ratio R/L, which depends only on the conductor cross-section of the bucket coils and is independent of the number of turns into which the conductor is subdivided. This time constant is typically of the order of 0.01 second, a period which is long compared to the transit time between drive coils. It is therefore possible to sustain the induced current with relatively little effort by means of suitably synchronoized asymmetric pulses superimposed on the sinusoidal pull-push oscillation of the drive coils. The asymmetry is needed to insure uni-directional induction and can be achieved simply by a crowbarred capacitor discharge (fast-rising, slow-falling pulse). Current induction will of course involve a certain penalty due to the limited coupling coefficient between drive and bucket coils, but the added dissipation will occur in the drive coils which are likely to be force-limited rather than heat-limited.

What makes this inefficient cousin of the mass driver interesting is the fact that it is capable of accelerating reaction mass or payload in the form of cheerio rings made of conducting material, or for that matter any pelletized conducting material available. It will therefore scale to very small size and operate without physical contact at high repetition rates, though at low efficiency compared to a mass driver. The device would be inherently very simple and have a virtually infinite service life, just like the classic mass driver.

8. Electromagnetic Terrestrial Launcher

Earth-based electromagnetic launching proposed by science fiction writers for decades[1,2] has never before been considered seriously. On the basis of software developed in connection with the Jupiter landing probe program[26] it appears quite practical.

A telephone-pole size vehicle 8 inches in diameter and 20 feet in length , weighing 1.5 metric tons, accelerated to 20 km/s at sea level, would traverse the dense part of the atmosphere (8 km) vertically in half a second, emerging at 16 km/s (escape velocity is 11), which is still enough to escape from the solar system. It would lose 3 to 6 percent of its mass by ablation of a carbon nose shield. Initial energy would be 300 x 10^9 joules, one third of which would be lost in traversing the atmosphere.

The launch energy may seem formidable, but it amounts to only 83 MW-hrs, which represents several minutes of output by a large metropolitan utility plant. The required launcher would be 20 km long at 1,000 g acceleration, the capability of Mass Driver Two. It would be only 2 km long, less than a small airport runway, at 10,000 g acceleration, which should be easily attainable by a helical railgun device, or even a classical railgun. Such a launcher could be installed on a hillside, or in a vertical hole made by an oversize rotary oil well rig.

One potential application is the disposal of nuclear waste. 2,000 tons of waste will be generated between 1980 and 2000. This waste could be launched out of the solar system by using off-peak power from a utility plant at a cost corresponding to only 2 cents per kw-hr of generated power which produced the waste. Considering that the average cost of power during the period will be 22 cents per kw-hr, this waste disposal cost is very low.

9. Conclusions

Rotary motors have not yet approached the conceptual or practical limits of their potential, even after a century of intensive evolution. Fundamental innovation still occurs under the stimulation of new technology and new needs.

Linear motors have not been pursued to anywhere near a comparable degree, although an appreciable literature exists. Linear motors might be on the threshhold of an evolution comparable to the evolution of rotary motors. The above survey indicates that there is no shortage of novel concepts. What makes an evolution likely and timely is the recent wave of interest and success in development of pulsed power systems, and the challenging fact that a motor of zero curvature is virtually free of all fundamental limitations on size, acceleration and velocity.

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OUTER DARKNESS

A zine written entirely (well, except for the title anyway) by Donna Struwe, living presently under the often tyrannical rule of my parents at:

2545 W. Winona St.
Chicago, Il. 60625
312-275-3428

Bill Colsher pointed out to me once (actually several times) that change is a good thing. And so, rather than tell Renee for the umpteenth time, "Of course I'll write something for Apa-Tech...soon--really soon...", I've actually started to put something down on paper. Whether or not this change is for the better, remains to be seen. I'm not sure how long any creativity I may have (if I have any at all, which also remains to be seen) will last.

I guess I should say a little about myself. I came into this world on Sept. 7, 1963, the youngest of five children. Being the youngest, rather than having the fun of tormenting others as Alice and Angel did, I had the agony of being tormented. However, this was to be beneficial, as it became, indirectly, the reason for my encountering fandom. My sister, Linda, having already gone to cons, Thurs. nite meetings, and Mobieus rehersals, had told me briefly about fandom. And as fate would have it, the Thurs. before she left for school, I would have been home with the one member of my family who still enjoyed tormenting me...and then a strange thing happened....Linda decided my life was worth saving and brought me along to Thurs. nite. There I was convinced that it would be in my own best intrests to attend Windycon. Soon after, it was Thurs. nite every week, and conventions whenever possible.

Windycon 6 was a convention of discovery for me. (So was Windycon5, but that's another story entirely) I found that by helping Isher huckster, I eventually see everyone I want to, because they all walk by (and usually stop at) the table, at some point during the con. Also, huckstering is a lot of fun (as long as you don't have to do it all day) I also soon realized that cons are not nearly long enough. I see everyone I almost never see otherwise, but I want to spend so much time with so many people, that I always end up on Sun., saying to far too many people, that we should have found more time to talk, and that the next time I see them we will. Which is of course, impossible.

As for my title, and why I can't claim it, (for those of you who are interested-and even those who aren't) After deciding to actually write something, I couldn't think of a title. So rather than not write anything, I called Bill and asked him if he could think of one. His first suggestion, See me, feel me, just didn't seem right for me. His next, A Room in the Attic, (as opposed to, obviously, Renee's A Room in the Celler) also wasn't appropriate. I thought of something simple like Why me?, but immediately realized all the mailing comments to me would be "Why not?" and so discarded it, also. Then Bill came up with Outer Darkness. And so, for those of you who might have asked where it came from--ask Bill.

Well, I guess that's all for now. Hope to see you all at Ishercon II.

Special note to Renee***I won't know if I can attend Ishercon II until, probably, the day before. However, since I'm definitely an optimist, for now, let's assume I'll be there. I've also decided to bring a few different kinds of tea-to be exact, I have: Royal Jasmine, Constant Comment (with orange and sweet spice), Irish Breakfast, Earl Grey, Lemon Lift, Cinnamon Stick, Peppermint Stick, and Plantation Mint. Just for the record, I havn't tried any of the above either--I picked up some sample packs of them all. (Notice that there's no Red Rose)
See you at New Years!!

Smith's CORONA

Dick Smith's apazine for APA-TECH #4 - December 1979

THIS IS...

This is **Smith's Corona** for APA-TECH #4 in December 1979. Smith's Corona is brought to you by Dick Smith of 1719 Forest Cove #103, Mount Prospect, IL 60056. He may be reached by phone at work at 312-266-4384 and occasionally at home at 312-439-9167. The preceeding home address is not very permanent.

Thanks again this issue to Datalogics (developers of high-speed text composition systems and the pun-filled DURESS operating system for the PDP-11/45 & 11/70 computer — running under DURESS is like running under water?) for computer time, typesetting and xerox.

NEWS & SO FORTH

Datalogics: The Datalogics job seems to be going well, so far, altho I've had the traditional getting-started blues on and off. I've been modifying the existing Z80-based intellegent editing terminal software to add some new features to it. We've started the design for the next tube and its editor even as I write this; we expect to have a working prototype next spring. So far, the future unit is in the "Brainstorm memo" stage, but we'll start getting realistic soon.

So far, I've pretty much had my way with regard to strange hours and the like. And my boss described one of the fringe benefits as "all the type you can stand to set"; as you can see, that's not too bad at all.

As if **two** crazy SF fen (Doug Price & myself) were not enough, Datalogics just hired Chip Bestler as the latest ~~victim~~ addition to its programming staff. Find out from Chip how wonderful it is here.

Car: Well, the car **has** gone to several cons, and has only broken down **a few** times. Valli & I spent an extra day in LaCrosse after CooleeCon 2 because it blew a timing belt; between myself and a local mechanic we were able to get it fixed and driving again on Monday after.

The latest exciting failure was the gearshift handle breaking off. I've been driving it with a nut-driver stuck over the stub of the handle to give me enough leverage to shift with. See what happens when you get a cheap car? You pay for **strange little** things that go wrong. I'm still relatively happy with the car; MPG has been pretty good, and I can do almost all of the repairs that it needs myself. (All the ones I'd never thought about, well, that's what will break next.)

Home: I still don't know exactly what my housing status will be after November. I **do** know that I won't be in the same place, as I've already turned down a chance to renew for 6 months. As before, exact details when I know them.

Cons: Since APA-TECH #3 was collated at WindyCon, I have been to CooleeCon 2 and I-Con 4, and I expect to hand this zine to Tullio at ChambanaCon 9 for delivery to Renee. Not much happening con-wise during December that I can see. The IsherCon II info showed up in Chicago with Renee, Tullio, Alex, and laser at a party for the excuse of having Jeff (Who? Duntemann? Who?) in town. Next year, there's ConFusion, WisCon, and then I don't know what else. My member number for NorthEastCon 2 is in the two-thousand's.

The backrub panel I was on at I-Con was a lot of fun. I was surprised by the number of victims (about 12 on a Sunday afternoon) and their relative lack of knowledge; we actually could teach them something. Nancy Read (from Minneapolis) is damn good; don't pass up a chance for a backrub from her if you get one.

Sex & other vagaries: Some Chicago fen noticed that Valli Hoski & I were spending a lot of time together. A few were around at I-Con when all that collapsed, as I got **violently** mad at Valli for her seeming to forget that I existed. I won't try to determine where the original fault lay; certainly I expressed my anger rather poorly (to say the least). I don't think this one will be patched up, and I am not going to try now. I'll write the whole thing off as a "life-style conflict" for the moment; maybe I can understand it all later. (Certainly there is good gossip around if you want more details than that.)

((Later)) That was pretty bitter, wasn't it. Anything with that much pain behind it must mean something; I don't know if it will get worked out, tho... we'll have to see.

((Even later)) Valli & I are talking again... watch this space to see what comes of it.

DEC: My ~~goddamn~~ wonderful former employer **still** hasn't paid my back expenses. It had better be soon!

Along another line, I trust everyone interested has seen the **PDP-11/44** announcement from DEC by now. Just in case you missed it, the 11/44 has a 22-bit address space (like the 11/70) but can only handle up to 1-megabyte now because of space limitations on its high-speed memory bus. It is priced down low too, at $25,900 including 256-Kbytes of memory, console interface, and (included as standard) TU58 dual cartridge tape. It has the separated instruction & data spaces and the more powerful memory management unit which allow it to (like the 11/45 & 11/70 but no others until now) handle true virtual memory. Floating point and commercial instruction sets are options.

MAILING COMMENTS

for APA-TECH #3

Cover: Yes!! This beautiful multi-colour stuff is one of the **few** good uses for ditto. Please, Sara, please, do more!

General & 555 Times: I, at least, had a good time collating. I notice that we forgot "The One Shot" in the ToC, but that's alright. I still don't know why Tullio &c. took so long getting their pizza.

Something Else Again: I rather like your log of NASFIC. I trust my check didn't bounce. Other NASFIC comments: The mostly GT run to that sandwich place with the Moosehead bheer & antlers was just fine; the place probably needed the business, and the owners loved it. Gretchen did fine with **two** Honorable Mention costumes, altho Sherry's didn't show all that was promised; that spider lady's sure did tho.

As far as I'm concerned, you can play (with?) your guitar anytime. I don't know how to encourage you, but at least don't worry for my sake. Please yell at me when you can't take my singing anymore.

Young & Abroad...: Why would anyone buy a computer? To write apazines with, of course. Regards your mc: see what happens when you write mailing comments without a copy of the zine you're writing about. Sorry! I remembered it was **something** spacey.

There are always programming jobs if you decide to change... at least that's how it has been for me. We still have that advantage, even with the lousy economy, over the physikers and so forth.

What is the Sound...: Yummy Higgins fillo. Crappy ditto repro, your comment to Gordon Garb notwithstanding. **Ditto, yuk!**

I'm not sure you can make your million with ray guns next to the Roxy. Better advertise in **Omni** tho, if you decide to go for it; that seems like the best sucker market to me. To be more honest, I suspect your product is too high quality for the mass market; if you sold even as few as thousands, you'd be immediately undercut by a piece of cheap blowmolded thermoplastic with an Xmas tree bulb and a lousy bimetalic thermal flasher. For five bucks.

Speaking of **Omni**, I trust you all noticed and read the start of the new Heinlein novel in their anniversary issue. Starts really strangely... I wonder if that's due to RAH's problems, crazy editing, or both? At this point, I've read the first two installments. So far, Heinlein has filled an entire swimming pool with lime jello, and had his hero wish in vain for the P.O. Box number of the Dorsai. I'm going to continue to refuse to buy this mag unless desperate for reading matter in an airport; it remains just a little too glossy for me.

Renee, a long time ago, I had a friend (actually I still have this friend, but he has changed his ways, I hope) who liked to use a "gambit" (a rather old-fashioned term for what is nowdays called "a line", I think) called "the White Rabbit". I forget the exact details, but I think you sit under a table

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and cry... then invite the beautiful young lady underneath the table with you.... I hope your rabbit doesn't do things like this to you. I don't **think** your rabbit is too interested in BYL's as long as you continue to feed him.

Speaking of rabbits, I seem to recall a song which goes something like "Killing the Wabbit". Maybe you'd better guard that wabbit well. Don't forget, New Year's is coming fast.

Transporter Topics: I thought that in the Bible, several of those old, old, old fogies were **after** Moses... Better not blame early death on the flood. But discussions here in Chicago convince me I'm wrong about the fogies... there may be something to your theory. Is this your theory, or from where did it originate; if it **is** yours, what prompted you to think about such things?

Medium crumbly?? "Lettuce Prey" isn't bad considering. And I **like** the illo.

Quintessential Singularity: This business with the two dozen Apples doesn't sound too unusual to me. Unfortunately, I get the impression that **lots** of educational types are like that with regard to computers. They yell, "COMPUTORS! We can get them to have our students play with. Maybe they won't knife us then. Their parents will love us. Goody, just like New Math. Or something." And they go out and spend money with **no** direction at all. I understand that, if Valli takes another job, she'll have a chance to rectify this for several school districts near Chicago; we'll all have to watch to see if **she** can do better.

Dr. Gonzo's Exotic...: See my comment above about educators and computors; I don't mean you in person, in fact, I expect you to **correct** such fuck-ups. Certainly **lots** of techies can help you if you need to hire consultants!

Re your comment: I'm happy to have had the encouragement I got to stay in Chicago. I managed to make the decisions I needed to make somehow; I'm mostly glad it's done with. I never will know whether I made the **right** decisions, but that always was the way life worked, wasn't it.

Why your title? I have some guesses, and I think the rest of the APA wants to know, too. And is decadence truly available, and at what price?

Olive Drab Lensman: Nice title. Audio material: enjoyed, but hard to comment.

Tales from the Charmed Sea: Yes, Keith, you do **look** like a NMF. But so do I when my hair is cut... and I've been thinking some about doing just that. (Opinions sought.)

Programmers do suffer! Just because we get paid for it doesn't mean that the jobs you do aren't sometimes a grind. Or that work on which one has spent hours can't go completely bad, driving one nuts... But, it's true that the job situation is better for C.S. people at the moment. And I will admit that when I worked for Systems by Graber (in Madison three or so years ago) I had a Ph.D. in physics who worked under **me**! I guess you can always program. Sorry!

Don't, however, try to take away the right of the otherwise happy and satisfied programmer to bitch about his job. Perhaps when you work with stupid machines all the time, you need even more to justify yourself as an independent-thinking ~~craftsman~~ artist who, in the process of developing the creative energy to do his job, earns for himself the privilege of complaining.

Yes, please, someone, the words to Benson, Arizona, please!

Flash: Larry Niven... I'd already told the WhatCon registration person (our own Bill Leininger) that I'd help. Now I know why!

The One Shot: "Type or be typeset", they pub their filthy zines. Who wrote this crap anyway?!? I'll never know, that's for sure. Does Tullio sell Rya (sic) guns, anyway? No wonder this one got omitted from the contents page!

Not a bad job, considering how & where it was written. Too bad they were all techies; there will probably **never** be any sex. The story could use the action....

Maybe part of the reason that **The One Shot** got written was the lack of that action in APA-TECH. It has been pretty dry.

Phantom Milk Shake: Where is it? I didn't get one. Not read, or even seen, therefore not enjoyed, therefore no comment. Definitely phantom.

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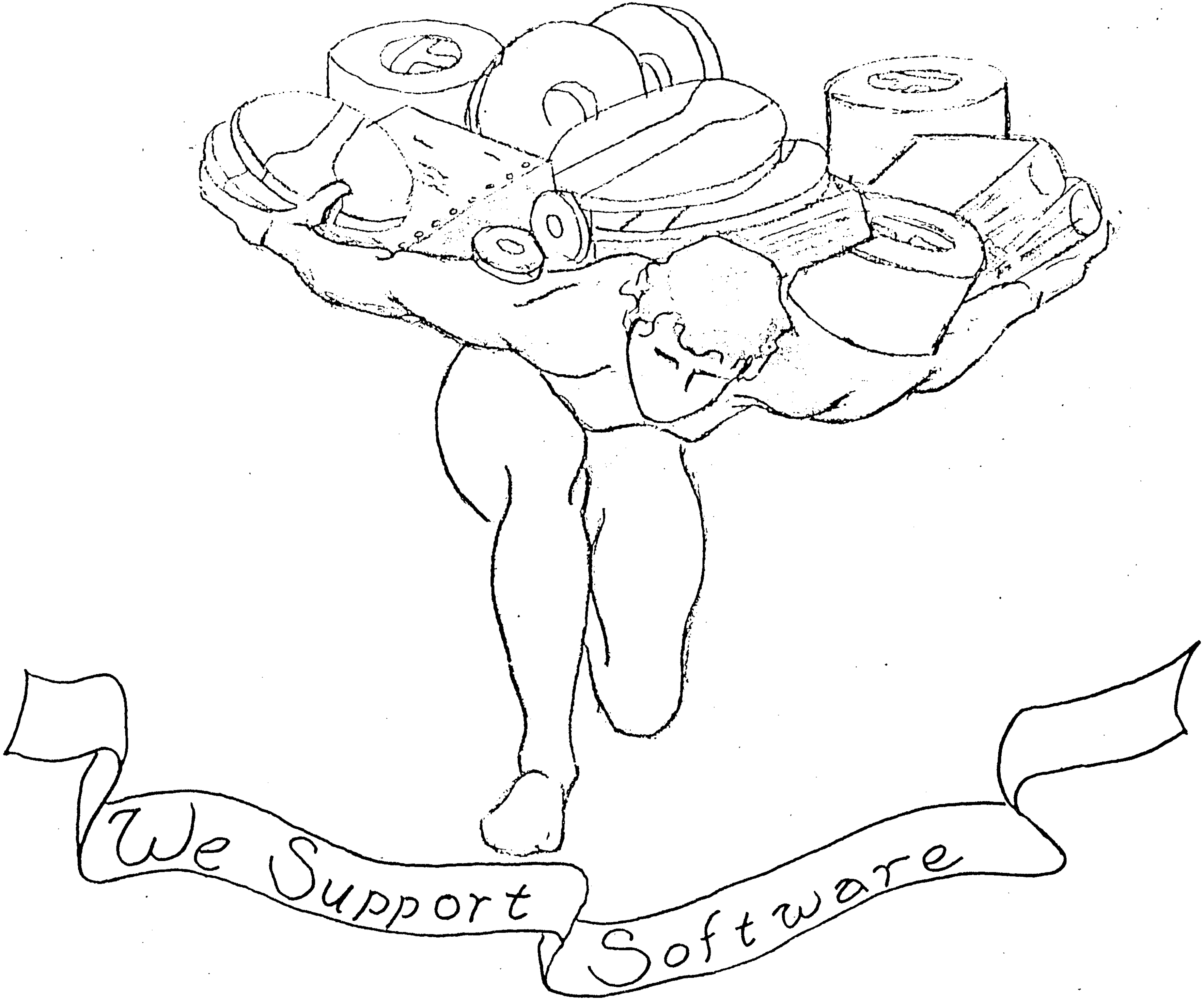
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westech

Westech #1 (Nov/Dec 79), for APA-TECH #4 Copyright 1979 by Jamie E. Hanrahan, 4406 Menlo Ave., Apt. 8, San Diego, CA 92115; (714) 284-4938

GREETINGS AND FELICITATIONS

from the southwest corner of the continental U.S. As this is my first contrib to APA-TECH, or in fact to any APA at all, please bear with me while I'm climbing the learning curve. A few of the abbreviations in ish 3 had me stumped until I found a multi-year-old faanish glossary at a local convention recently. Now I know how users feel when I throw computer jargon at them!

(RE)PRODUCTION NOTES

This issue of Westech is being (and most future issues will be) produced on a DEC WS78 Word Processor. The WS78 consists of a VT52 terminal with a special keyboard and a PDP-8 inside, a pair of single-density floppy disk drives, and a Diablo HyType II printer mechanism with custom DEC electronics. The system also has a communications port and can be used as an intelligent terminal -- "documents" (files) on the floppies can be sent to or received from remote computers. Reduction and cloning will be done on a Xerox 3107. I would have preferred that the copy not be reduced quite this much but the machine only has the one setting. Sure is nice to have an understanding boss (I have to buy my own paper and toner, but that's all).

SANDTRACKS

Being the only GT'er in San Diego (to date, at least) can give one a feeling of isolation. The LA area (130 miles north) has three or four members, but to date none of them have shown their badges or blasters at a con. Perhaps I'll find time to write to them so we can arrange to raise some Cain at Westercon next year.

Although San Diego is not a city one associates with electronics, there are a number of prestigious firms here. Non-Linear Systems, inventors and leading purveyors of the digital voltmeter, is based here; so are Wavetek (signal generators), Solitron (semiconductors), Ivac Corporation (biomedical electronics), and Topaz Electronics (power isolation and backup equipment). And a number of companies that aren't actually based here have R & D or manufacturing plants in the area; the list includes Control Data Corp., Burroughs, General Dynamics Electronics Division (which is at the site formerly occupied by GD Astronautics, where Project Mercury's Atlas missiles were built -- *sigh*), and NCR. And let's not forget General Atomic, where they build power reactors, radiation monitoring equipment for nuclear plants (I'm doing some of the programming for that), and small reactors for training, research, and isotope production -- and where the world's largest corporate-run fusion research project, Doublet III, is in progress.

Unfortunately, there are few stores here that cater to the electronics experimenter, but LA is close enough that I can go there for parts any time I really have to -- and several of the mail-order parts houses that advertise in the back of PE, RE, KB, Byte, et all, are based in LA and have retail outlets. And there are a couple of good surplus places here, and a couple of really superb ones in LA. What more could a techie want?

The weather here is nice, too. Very little smog. And the people are nice. And we have the Reuben H. Fleet Space Theater.

Sorry about all the enthusing, but I just plain love the place. I'll bet you never would have guessed.

STAR TREK: THE ~~BLOOPER REEL~~ MOTION PICTURE

If Paramount has their way, the long-awaited and long-touted Star Trek movie will be released nationwide on December 7th. In fact, Gene Roddenberry has said loudly and often that it would be released whether it was finished or not ("Come back next week for reel four!"). I've seen an almost-final version of the script, and if it filmed the way it reads it'll be visually spectacular, but the story simply wasn't worth the wait. Rumor has it that Paramount has spent much more than the reported $40 million on the film, and if it fails, the studio will be in deep trouble financially. But I suspect that the effects alone will be enough to pack 'em in, and the merchandising will bring the studio a fair piece of change to boot. (The word is that one of the reasons everything -- ship exterior, ship interior, hand props, uniforms, everything -- was changed was so that Paramount could get new copyrights on it all.)

I must point out that there's nothing really wrong with the story, considered on its own merits. But it just isn't "big" enough to be worthy of a full-length motion picture, especially not such an expensive one. It would make a good second-season episode. As a matter of fact, it was a second-season episode. Remember "The Changeling"? The one about Nomad, the NASA probe that encountered an alien probe and came back to "sterilize imperfections"? Well, change the locale from wherever to the Solar system (much more menacing if it's already at our front door), make the thing as big as it is powerful (like the "Doomsday Machine" from the episode of the same title, or the space-going ameba from "The Immunity Syndrome"), and make the story of the probe's augmentation really implausible, and you have most of the "new" Star Trek movie. Big deal.

One really does wonder why Gene Roddenberry agreed to do such a lame story. There are several theories:

(1) He's intentionally trying to get the fans to stop asking him and the studio to do more Star Trek, so that he can get on with other things he wants to develop.

(2) He doesn't realize how deficient it is. He's said often enough that the fans knew more about the show than he did, and that he never did know just what made the series what it was ("If I did, I'd be applying the same formula to new projects").

(3) He just doesn't care any more.

Take your pick. Personally, I'm opting for (3).

But like I said, it will be impressive visually. Two friends of mine did some time in Paramount's fx shop, working on the models for the film, and the slides they've brought back of some of the completed "miniatures" are absolutely incredible. Some were also very funny. It seems that there were a number of fans working on the project, and some interesting shapes have appeared in the practical lighting in the V'ger spacecraft models: If you look close, you can make out letters that form words like "Exorcist", "Alien II", and "Mork and Mindy"...

The promotion that this film is getting is unbelievable. Literally. Get this: San Diego boasts one of a very few remaining chapters of S.T.A.R.*, and one of our number received a hasty call from the manager of the theater where ST:TMP will be opening here. Would any of the local fans be interested in modeling costumes from the movie? Real costumes from the movie, mind you, actually worn by (gasp) William Shatner and Leonard Nimoy? Well, far be it from even the most thoroughly reformed of our once-most-hard-core Trekkies to turn down a chance like that... About a dozen intrepid souls showed up at the theater at 8 AM Friday morning (Nov. 23), and the ones who could be matched up size-wise with costumes spent the better part of the next two days modeling them in one of the San Diego Zoo's ampitheaters while an emcee worked a bunch of corny references to the movie into a monologue about seals. This shtick will, according to those present, be repeated next in Chicago. Too bad Cosmo had to move to NYC; he would have looked great as an Andorian.

---

*Star Trek Association for Revival; the San Diego chapter, of which I'm a charter member, metamorphosed into a general-interest sf club several years ago, and we retained the name as a tribute to our origins. But Paramount doesn't know that.

It really bothers me to see this much money and effort being spent on what is, basically, another space opera. Mass-media sf could go a long way toward convincing the public to support an expanded space program -- if the benefits of such a program were shown. Instead, space is repeatedly portrayed as nothing more than the locale of awesome dangers and spectacular battles. Certainly a movie that shows one of NASA's Voyager probes as a future menace to the entire planet is not going to help.

THE ELECTRONIC APA

In issue 3 I noticed a few mc's regarding the idea of a computerized, on-line APA. Such a thing exists now on the central timesharing computer of the California State University and Colleges and is accessible to students at any of their 19 campuses.

The file is called "The Fanzine" (clever, huh?). It is one of several special-interest bulletin board-type files that are maintained by a program called "Userfiles". About a dozen people regularly make entries in The Fanzine; the file averages from ten to 20 new entries per month. The number of readers-only isn't known, but it's probably quite small.

The entries are mostly opinions and news items on all kinds of sf-related topics. There are also a lot of comments on previous entries, so the overall effect is that of an instant-response lettercol. Entries tend to be short -- usually only a graf or two, rarely more than three, and often only one or two sentences (about like letters-to-the-editor after the editor cuts them).

Most of us who use The Fanzine enjoy it immensely. Think how much more fun it would be, I thought, if it was run on a nationwide timeshare net, with contributors from all across the country. Ergo, the following very rough feasability study.

Let's pick Telecommunications Corporation of America (TCA; they've had a couple of ads in Byte recently) as an example: They want $1/month to store a 2048-character block. (They also want a $100 start-up fee per user, but maybe they'll drop that as competition stiffens.) Suppose we had 50 people, each making an average of two entries per month, at an average of 1K characters (about 150 words) per entry. Entries would be retained in the file for a month. Then the file would have an average length of a hundred entries, or 100K characters, which would cost each user a dollar per month to store. Not bad.

But then there are connect-time charges to consider. TCA has a minimum charge of $5/month, which at $2.75/hour covers 1.8+ hours of connect time. Reading all the new entries each month (100K characters at 30 chars/sec) would take a little under an hour, leaving ample time to compose and edit two entries per month without incurring additional charges. So we're looking at about $6/month total, or $72/year. Ouch.

What you're looking for are (a) sf fans who (b) are also computer hackers, (c) can conveniently get to a terminal and modem during non-working hours, (d) live in an area from which TCA's network can be accessed via a local call, (e) are non-passive enough to participate in an APA but (f) aren't already busy with too much fanac, (g) are able and willing to spend $6/month to be part of an APA, and (h) are conscientious enough to keep the $1/month flowing to the file's host. While I don't doubt that there are many such people, I do doubt that one could make contact with fifty of them quickly enough to get something like this going. The big killer is that $72/year.

If the idea did catch on, you would have to limit the contributor list; this is not a case of more-is-better. In fact, fifty might be too many. The more people you have, the more entries will be in the file, which will stimulate more responses from everyone, and the file size (and storage costs, and cost of connect time to read all those new entries) will go right through the roof. As with most exponential processes, you can't win. (A major improvement over printed APA's is that people on the waiting list could at least read the file any time they wanted.)

In short, I think it could be made to work, but only if the connect-time charges were lower -- say, on the order of a dollar an hour. If we can find a suitable timesharing firm, let's do it!

OLD BUSINESS
(aka mailing comments on #3)

Being a late addition to this band of loons, I'm a bit reticent about jumping into the middle of a lot of discussions I never saw the beginnings of, so I'll keep this brief (this time, anyway).

SOMETHING ELSE AGAIN -- Re ct YAAITSS: Selectrics may be complex and relatively slow, but the price/performance ratio is only marginally lower than a daisy wheel's and the print quality is superior. Besides, you're getting a dandy typewriter in the bargain, and believe it or not, I do have uses for a stand-alone typewriter. Re ct USIL (who?): Thanks for the new San Diego CBBS number; they changed it some months ago (from (714) 565-1865) but no one I asked had the new one. Re con report: I liked it! Please do it again at your next con. A large collection of such reports would make one hell of a what-mistakes-to-avoid document for con-throwers (not, of course, that many of 'em would bother to read it).

YAAITSS -- Re ct The Chair (and many other people's cms on the same topic): I see nothing wrong with the name APA-TECH. Re ct T. Talk: See the 25 Sep 76 Science News, pg. 199, for an interesting note on how public opinion can positively affect the space program.

RENEE -- Re ct Something Else Again: Ditto your remarks on marriage causing gafia. I've seen it happen many times, even when active fen marry each other. Re ct GIGO: Also ditto on long-distance relationships. I'm sure there are some folks who can make them work, but I'm equally sure that I'm not one of them.

TRANSPORTER TOPICS -- Every fan I know has had trouble pulling others into fandom. I've concluded that if I don't get a response something like "You mean there are conventions for sf fans? Wow!!! When's the next one?! Where'll it be? How much will it cost? (etc.)" when I first bring the subject up, I might as well forget it; that person Will Never Understand.

QUINTESSENTIAL SINGULARITY -- If we can call our mailing comments "poles", is this the Polesotechnic League?

DR. GONZO: I sympathize, as my name is constantly causing questions too ("But I thought Jamie was a girl's name?" ("Well, actually, it's used both ways..."))

C.R. JONES: Your repro is ok, but it didn't have much to work from. Clean those keybars! I like your album list and have a few of my own to add, maybe nextish.

CHARMED SEA: Re Alien -- I do hope that spaceships don't get that cluttered; they'll never get to where they're supposed to go. As Niven points out in "Bordered in Black", what do you do if you forget where you put the meteor patches?

That's it for this time. Hopefully I'll have more to say next issue.

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MEROMORPHIC MÉLANGE

5 October 1979
for APA-TECH 310

BEING AN OCCASIONAL SUPPLEMENT TO "THE QUINTESSENTIAL SINGULARITY"
ISSUED BY THE CENTER FOR SPACED RESEARCH,
A LEISURE-TIME SERVICE OF OSSA-ON-PELION, INC. ("NO JOB BIG ENOUGH")
307 E. WHITE ST., #34, CHAMPAIGN, ILL. 61820 (217)-359-9544
GREGORY RUFFA, CHAIRMAN-OF-THE-BOARD AND PLUMBER

I'm typing this up at my favorite time for such things, namely 2 AM on the day I'm headed for a convention. I was going to start this addendum a few days ago, but the stuff I was going to write about was wrapped up only a few hours ago.

I was indeed at Northamericon, buzzing around the hotel, salivating most repugnantly, and harassing the news vendor for any available journals. Alas, little was available to the press that bygone Labor Day weekend regarding our visit to Saturn. The probe was stuck in a low rate of data transmission, the planet was near conjunction with the Sun, and the Sun was in one of its periodic, maximally-active, obnoxious moods (a condition it promises to be in for the next couple years: we shall simply have to endure ...). What finally did reach responsible publications, such as Science News, was of great interest, but leaves me climbing the walls until Voyager makes its way out there (30 km/sec scarcely seems fast enough, does it?).

* * *

My work on the APPLE has at last borne some fruit (after much pummelling of the device when it misbehaved). Next week I expect to have about 35 minutes of animated sequences tracing the evolution of individual stars of 15, 9, 5, 3, and 1 solar masses, two combinations depicting the relative rates of development of stars between 15 and 3 solar masses and between 3 and 1 solar masses, and a grand finale showing how a cluster of stars ages (comparison of such a theoretical cluster model with the observed Hertzsprung-Russell diagram for a real cluster permits us to estimate the ages of star clusters). If the Astronomy Department get hepped up enough about it, a videotape of the display may be used in several of their courses.

The prospect I am really excited about, though, is the animation of a concept I've been piecing material together for over the last three years. Thanks to the inestimable aid of Mssrs. Higgins and Leininger, who tipped me off about an article in the April issue of The American Journal of Physics, I have at last completed a program to compute the appearance of the sky as observed from a starship in accelerated (and then decelerated) flight from the Earth to any specified destination. I have run off this past evening trips to Alpha Centauri, Tau Ceti, and 70 Ophiuchi (as for the reasons I chose these destinations, see QS 1) and have drawn up color maps for the latter jaunt (I'm bringing this to Windycon for anyone interested). I hope to have an APPLE-animated version of these journeys ready about a month hence.

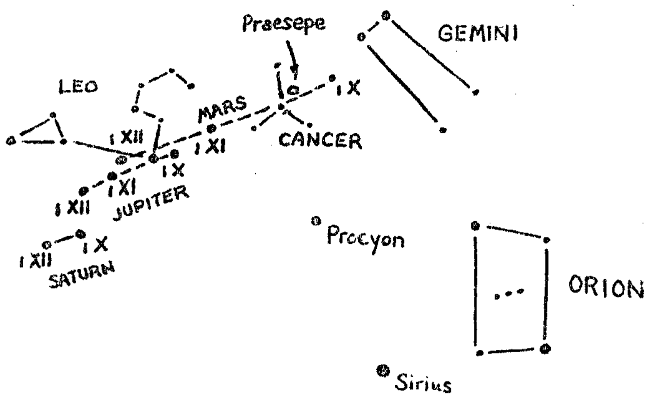
Because of the limitations imposed by using a 32K APPLE II minicomputer, my computations only treat the 15 brightest stars in the skies of Earth (this is a cutoff at apparent magnitude +1.0). My drawings show the sky's appearance every 0.2 years of ship time, since more frequent don't show much change, except around the middle of the trip, when the starship is travelling fastest and then beginning its deceleration. My grandiose dream for this project is to lay hands upon a really large, fast computer and one of the best graphics systems in existence (anyone able to suggest such a place that I could break into undetected for a weekend?). The results definitely confirm what the folks in Am. Jour. Phys. found and what a moment's physical insight tells you: there is no starbow (sorry, Mr. Pohl, et al.). In fact, some of the results are rather surprising, what with stars fading out and then back in again, and the like. I can't wait to pummel the computer some more ...

* * *

I goofed in a remark I made about where to look for Mars over the next couple of months (see QS 2, p. 6). If it hadn't been 4 AM, I'd have realized that Mars will be in rapid eastward motion through the end of this year, so that at present it is already approaching the Praesepe (or "Beehive") in Cancer and will be deep into Leo by the time APA-TECH 100$_2$ appears. This means you'll still have to get up in the wee morning hours to see it (OK, so while you're partying in Chicago, glance out an eastern exposure about 3 or 4 AM).

The last few months have been utterly bereft of naked-eye planets in the evening sky, though things will perk up immensely come next spring. For now, Venus will be gaining altitude at each successive sunset for some time to come; you might start watching for it in the west-southwest after October 15th. Believe it or not, Mercury will be up also during the last half of this month, but it will be quite low and immersed in twilight.

While you're up looking for Mars, you can see Jupiter, too; it will be in the vicinity of Regulus, the brightest star in Leo. Starting late this month, Saturn will be a good morning star as well at the eastern end of Leo. Here's a rough map of all this stuff:



Hope to hear from you folks again in two months!

YOUNG AND ABROAD

in the Solar System

The sometimes contribution to APA-TECH by Michael Sestak from
130 Surf Ct #103, Houston, TX 77058 (713) 333-4158

Nice cover last issue--I can't even type on ditto that well.

I sit amidst the rubble of plans made and abandoned. I am now part owner of an automobile--a form of transportation I generally shun. This typer is once again giving trouble. Live, from the swamps, it's Turkeyday Morning.

Musings on an article in progress

With the growing use of mini- and microcomputers in science and industry, there is a strong need for a means of teaching people from all these areas the fumdamentals of how these little marvels operate. Single board computers are nearly ideal for this purpose. Their minimal display and data entry capability, however, generally limits their usefulness to those who have had training in number systems and are willing to learn how to program in machine language. A terminal would help, but since these usually cost more than the single board computer, this idea is usually rejected. That is it was until someone came up with the idea of LED or LCD alphanumeric display miniterminals. Texas Instruments has put these two ideas together and produced the TMS990/189 a single board computer including on board miniterminal, ROM monitor and line-by-line assembler, cassette interface, and user address able LEDs for I/O interfacing exercises. This is designed as a teaching machine. It has an auto-start feature so that immediately upon applying power, many board functions are tested and it is ready for exploration by even the most naive of students. On the other hand, the board is based on the TI 9900 microprocessor, a 16 bit machine with hardware multiply and divide and a special I/O bus structure suiting it for many sophisticated applications for the advanced student or even in industrial control applications.

While this seems to be an excellent tool for familiarizing students with the fast expanding world of small computers, there are a few drawbacks. Any course which uses only one machine must be biased toward teaching subjects which are peculiarities of the architecture of that machine, rather than generally available features. Also, the miniterminal on the board uses only 7 segment LED displays, so to provide the full set of alphanumeric and special characters desired, some peculiar figures are used, which take time to adjust to. The board does have an RS232 serial port for use of a CRT terminal if one is available and for entering long programs, this certainly is desireable. The other problem is not with the board but with the Microcomputer course book TI puts out for use with the board. The Users' Guide that comes with the machine is well organized and few errors were found in it, but the course book, supposedly more geared to the beginning student lacked organization beyond the first few chapters and contained numerous typos in both text and sample programs. The cost of this whole package including single board computer, power supply and manuals is about $350.

Basically the article was instigated by a course I took last spring through the local IEEE section using the TI board.

POST HUMOROUS

SOMETHING ELSE AGAIN

As Julia Childs once said, "Like the other spread, I try not to let that word pass my lips." Jerry Pournelle speaks loud and long and loud and long... about many of the problems that are greatly alleviated by space faring. Among them are resource shortage and population density. It is a much more complicated system than Jerry p. usually gives the impression but just think of it this way; mankind has always tended to migrate to where the energy, transportation and raw materials were cheapest. As technology improved, the forms of transportation, energy and raw materials changed. When the technology became available to do so, people moved their towns from streambeds to coalbeds. It was simply cheaper to mine coal than to build a big enough dam to provide the equivalent amount of energy, especially since at that time coal energy was more portable than water energy. At this point in technological development, it seems that to provide energy in the quantities desired, to move the quantities of materials desired and to obtain the materials desired in sufficient quantity--space should be the place. Now, with the invention of electric power gereration, hydropower got a new lease so I wouldn't write off planetary surfaces entirely--they're probably good for something.

PS. Bill your Houston ABBS number is defunct, too bad.

MESKLINITE CLAPPING

But, my congressmen are already pro-space. Obviously, there is lots of aerospace industry in Texas. I wish they were for it for the right reasons. I also wish all govt types would look out their windows once in a while instead of just reading news summaries and mail summaries and talking to special advisors. If they only knew how the majority realy felt then acted on it. The only other time when SF movies etc have been this popular was just after Sputnik. It may be just escapism this time, but it may be more.

I bought half of a '74 T-Bird reposeessed by the credit union It is a huge bomb and was a demonstrator so it has more worthless gadgets in it, but a friend who I worked with in Columbia, Mo, needed a car and it was only $1000. That is not important. The ceiling inside is nice looking (almost leather like) very thin brown vinyl. Have you ever checked on/considered brown for raygun holsters?

TRANSPORTER TOPICS

Not so many years ago, I read a book proposing just that theory for things bibical. The major flaw in this is that the major absorber of outgoing infrared radiation is water. Increase the atmospheric water content and you warm the place up as less IR escapes to space. Only a few degrees mean anual temperature increase would melt all continental ice sheets and these such as on Greenland and Antarctica are much more than 5 thousand years old. It would seem to me that at about the time people became interested in the sky their technology required more knowledge of time and lo the heavens are a giant clock. How many monstrous feats of ancient engineering, thought until recently to be merely the outpourings of religious fanaticism are now being shown to be tools for using this celestial calendar?

QUINTESSENTIAL SINGULARITY

Gee, it's nice to know there are plenty of supernovas to go arround for everyone. One of the people who runs the Computerland down the block from me worked on the Mercury Program in mission planning and such. If I remember what he said properly, they used an IBM 7040 or some such. In any event, his comment was that one of your 48K Apples with disk would be more than enough to run the entire Mercury program.

SMITH'S CORONA

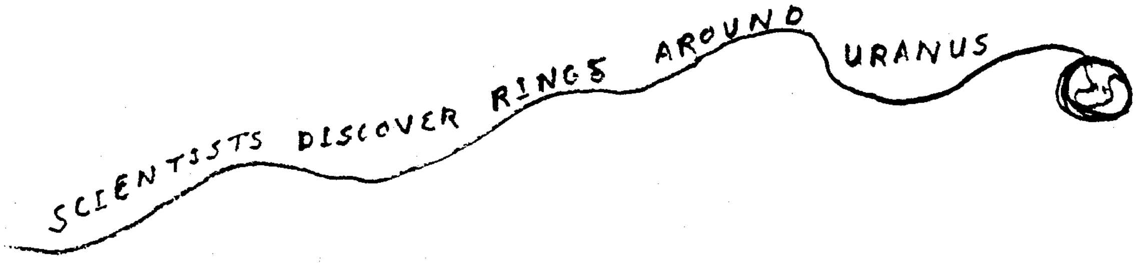
It's like this, around here we're all supposed to be engineers and scientists, not to mention poor government contractors; therefore, there is no word processing equiptment more elaborate than an IBM Selectric around where I work. Thus, until I can get my own, this is what you get.

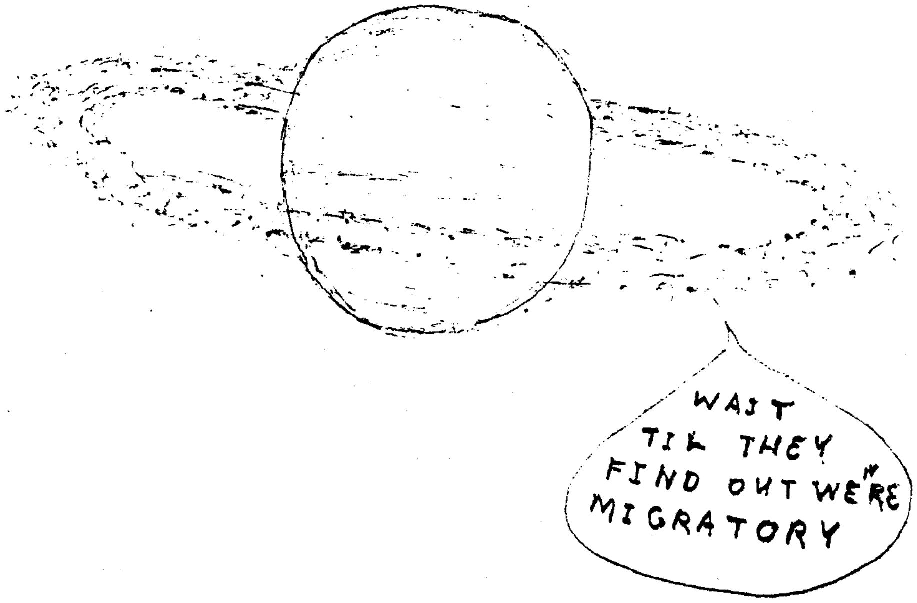
DR GONZO I have never been able to bend any art form to my will. Browbeating one or temporary but unwilling submission is about the best I've ever done.

O. D. LENSMAN You will find mars not so easy to take over as you think as Gordon will tell you.

CHARMED SEA Does that mean yours is a virtual fanzine and what is an anti-fanzine.

ONE SHOT I think that thing is about to collapse into a singularity (ah well, thats one way of getting rid of the clutter of excess fanzines).


SCIENTISTS DISCOVER RINGS AROUND URANUS


WAIT TIL THEY FIND OUT WE'RE MIGRATORY

The Quintessential Singularity$_3$

18 November 1979
for APA-TECH 4_{10}

being a journal of complex, imaginary, and irrational studies
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gregory ruffa, proprietor and road manager

acknowledgement: this issue was entirely produced while on tour,
at the home of irwin t. lapeer in boston, mass.

This is the last issue of QS to be issued from the CSR's present Champaign site. Effective January 15, the CSR will be uprooted and hustled off to its new location at ... well, I really don't know, either, at this writing. My hope is that I will soon have a job with somebody; the odds favor my turning up in the mystic, faraway East, whence I came. With any luck, my next writing will find me employed at something at least palatable ...

* * *

The Education Department's APPLE croaked for about two weeks due to faulty logic boards (oh sure, you could run your program, but -- ha, ha -- try editing it...), so I'm continuing behind my intended schedule. Nonetheless, I'll be attempting the first videotaping of some thirty-five minutes of assorted stellar evolutionary sequences when I return to Illinois in about ten days. Then it will be on to further fun with the APPLE as I try to run off two other videotapes on other astronomical topics in about six weeks.

It seems that a past Master's Degree recipient of our University's Astronomy Department, a nodding acquaintance of mine, obtained a teaching job recently at a high school in Springfield. From word which has filtered back to me, part of his teaching duties involves developing educational material on an APPLE minicomputer; seems that, at present, he's the only person there who knows much about them. It also seems that this school has just about two dozen of these devices piled up in a storeroom. Curious coincidence... Next time I see him, I'll have to find out how he's getting on.

* * *

During the interval over which I was preparing my spiel on supernovae, I came across a related reference while I was looking for something totally unrelated in a back issue of Sky and Telescope. (Isn't that usually the way it is? You learn so many interesting words while looking up some other word in the dictionary.) At a meeting of the American Astronomical Society during March 23-26, 1975, Sidney van den Bergh of the David Dunlap Observatory in Toronto suggested that the current estimate of the frequency of supernova explosions in galaxies (around one every 10 years) shows that the odds are better than even of seeing such an explosion in this present generation's lifetime (say, by 2050 AD). His particular galactic model indicates that half of all galactic supernovae appear to us as fainter than magnitude 8 (this is about ¼ as faint as the faintest stars your eyes can see in a very dark sky) and essentially all of them are strongly reddened by interstellar dust. He suggested that observers keep an eye out for very red 'novae' that take a long time (typically, a year or so) to fade after maximum brightness. I copped this from an abstract in the *Bulletin of the American Astronomical Society* and unfortunately have not been able to locate more details published anywhere.

Another historical supernova has turned up! From a note in October's *Sky and Telescope*, it appears that a tentative identification has been made in Chinese records of 1403 AD of a 'guest star' with the location of Cygnus X-1. It is thought that observers may then have seen the supernova which produced the black hole or neutron star (some controversy remains) in that binary star system.

There should have been a supernova in 1667. The supernova remnant known as Cassiopeia A is a very intense, young radio object estimated to be around 310 years old. Curiously, no record of it has yet turned up. I am considering including it as a historical supernova, though, since we are still discovering and translating Chinese sources, as witness the above, and other sources may have been suppressed by contemporaries. It has long been a mystery why there were no European records of observations of the supernova in 1054, which produced the Crab Nebula and its pulsar. Recent scholarship suggests that it was observed in Constantinople but that the shaky political situation there at the time may have caused leaders to downplay any mention of such an inauspicious omen. As with anything else, it may just be a matter of time before further documents come to light.

I will thus revise my statements of last issue to say that there were perhaps *ten* supernovae easily visible to observers in the last 2000 years. This does not affect my galactic model calculations, but it does change my estimate of the chance that you'll live to see the next bright supernova. Using the same approach I described earlier, the probability of seeing at least one more supernova by around 2000 AD becomes about 42%. Oh well, not as big a change as I thought. Watch the skies!

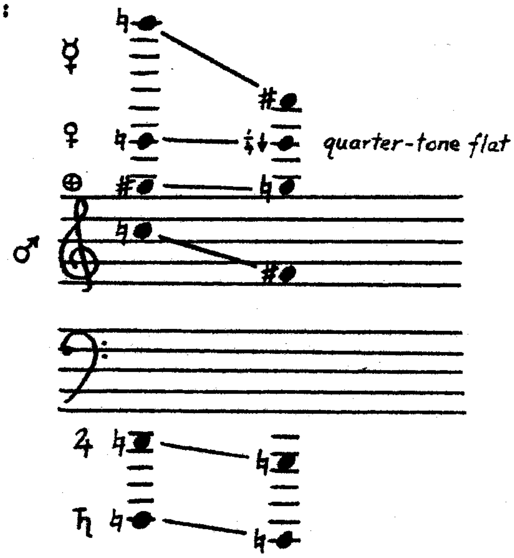
* * *

The Astronomy Department has acquired a copy of the Ruff and Rodger's realization of Kepler's *Harmonice Mundi*, which I described in QS1. I happened to find it in a locked cabinet while obtaining something else; I made a copy of the booklet accompanying it, but I haven't heard the recording yet. Maybe the record will get borrowed the next time I'm in that locker...

That booklet describes the details of Kepler's ideas, the mathematics of conic sections, and the manner in which the music was synthesized. One interesting feature not mentioned in the publicity elsewhere is that the stereophonic sound is employed to shift the tones in aural 'space' to provide a sense of the planets' orbital motions; this is done in a manner which mimics the computed positions of the planets over the interval represented. The tonal 'range' of the planets was also listed:

planet	pitch (Hz):	high	mean	low
Mercury		5262	3321	2285
Venus		1318	1300	1283
Earth		827.4	800	773.9
Mars		517.5	425.3	355.8
Jupiter		74.48	67.49	61.36
Saturn		30.37	27.16	24.43
Uranus		10.463	9.523	8.704
Neptune	'trans-Keplerian'	4.935	4.855	4.776
Pluto	planets	5.698	3.221	2.068

In modern musical notation, these ranges may be represented approximately as:

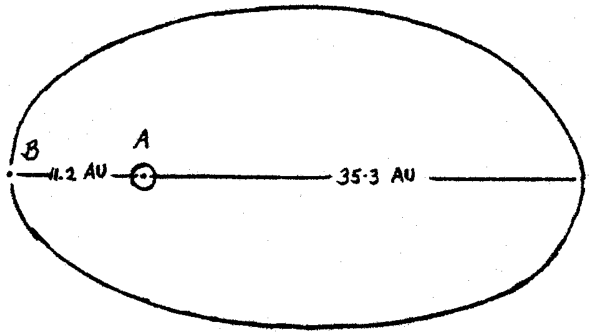


The 'trans-Keplerian' planets are, of course, too low-pitched to be humanly audible, so they are represented by the appropriate number of 'clicks' per second; the composers say that these planets comprise the 'rhythm section'. A certain cabinet is going to get broken into next week...

* * *

I decided to take a look at three of the binary star systems I mentioned in QS1 to see if binary systems can actually provide suitable planetary environments for life-like-us. The only systems among the stars I listed for which I could find computed stellar orbits were Alpha Centauri, 70 Ophiuchi, and Eta Cassiopeiae.

Alpha Centauri:



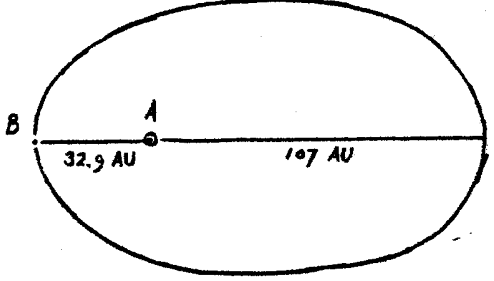
scale drawing of relative orbit of component B about component A

circle around component A represents an orbit 1 AU in radius

The absolute magnitudes of Alpha Centauri A and B are 4.5 and 5.9, respectively (the Sun is 4.8). A planet must be 1.19 AU from component A to receive the same amount of energy per unit area per second as Earth receives from the Sun; it will receive at most 0.4% as much from component B. Stable planetary orbits are possible only out to about 3 AU from A, so it probably has no Jovian (gas giant) companions. A planet must be 0.62 AU from component B to match our thermal conditions; it will receive up to 1.3% as much radiation from A. The limit for stable orbits is about the same, so Jovians could accompany component B.

The configuration of 70 Ophiuchi is almost identical: minimum separation is 11.4 AU and the maximum is 34.2 AU. The absolute magnitudes of the components are 5.7 and 7.4, however. For reasons discussed in QS1, only 70 Ophiuchi A is a candidate for possession of habitable planets. To receive as much energy as we do, the planet has to be 0.68 AU from the star; it will receive at most 0.08% as much energy from components B. Component A might have Jovians in orbits near the stability limit.

Eta Cassiopeiae has the following configuration:



scale drawing of relative orbit of component B about component A

orbit of 1 AU radius about A is shown

The absolute magnitudes of the components are 4.9 and 8.7; only component A is potentially suitable for life-bearing planets. To possess thermal conditions like ours, a planet should be 0.97 AU from that star; it will receive at most 0.003% as much energy from component B. Component A could have Jovian companions in stable orbits.

All of this indicates that Alpha Centauri A, 70 Ophiuchi A, and Eta Cassiopeiae A can provide stable thermal environments for Earth-like planets at the proper distances from them, provided such planets have formed in these stars' 'zones of continuous habitability' (see QS1). Planets about Alpha Centauri B receive too great a periodic contribution from component A to provide a stable environment. Nevertheless, it does seem clear that widely-separated binary stars could also be reasonable places to look for 'Them'.

Having said all this, there is a news note in the November Sky and Telescope saying that there is no current evidence for a third body in 70 Ophiuchi, based on a current re-examination of the stellar motions. A review article by Peter van de Kamp in Vistas in Astronomy back around 1977 stated that there is no conclusive evidence for any planetary companions around any of the nearby stars examined thus far. He says he's 'biding his time', though, and is still watching...

* * *

POLES OF ORDER 1 -

SOMETHING ELSE, AGAIN!: Yes, I've found that I've enjoyed conventions most by not coming to the scheduled events...

IN THE SOLAR SYSTEM: As I am typing this, Jim Loudon of the University of Michigan Exhibit Museum (and 'space' correspondent, occasionally, on NPR and elsewhere) is giving three three-hour lectures on the Voyager missions to Jupiter. (If I'd known when he was coming, I'd have adjusted my travel plans...) He presented a series of about ten such lectures last fall on then-coming space events. He never fails to fill auditoria of 500-plus seating capacity to standing-room-only levels. The interest in space is decidedly present in the American public. I expect the money to come pouring back into the space program in a few years...

APPLAUDING, MOSS-FREE MESKLINITE: What do you folks think of the rendering of the Mesklinite in the new Barlowe's Guide to Extraterrestrials?

BARBECUING TRANSPORTERS: Controversy, hunh? Hoo boy, Kid, are you gonna get controversy! I will hold my peace, however, until you have finished expounding your hypothesis...

Feghoots?! We gotta have Feghoots, yet?? I'll go so far as to say that it's as good as Feghoots typically are...

I was surprised, too, when I first saw that photograph. I won't spoil it by saying what it is.

DR. GONZO'S: You wanna hear about the APPLE II? Rowrbazl! Actually, it's like the little girl with the curl. I've been using the Education Department's APPLE for about four months now. It's quite pleasant to use the APPLESOFT system with the graphics capabilities most of the time. But when the machine screws up, wow! I have two files on my diskette that are unusable because the APPLE 'glitched' while saving them and forgot to put on an end-of-file or something. The files are on the volume catalog but cannot be loaded, run, edited, or deleted. The machine got sick about three weeks ago and did all sorts of horrible things to people's work! The problem was finally traced to a faulty logic board which was yanked. In tracking that down, we also learned what nasty effects Illinois Power Company's voltage fluctuations have on the device...

Two other little things...First, with only a diskette drive and a color TV connected to it, the APPLE seems to overheat within fifteen minutes. It will then do lovable, eccentric things like find a syntax error in a statement like 'B = 2'. We've had to run it with the lid off and an electric fan blowing over it. Of course, the basement room in the Education Building where we work would get to about 80° in the summer. The manufacturer says that shouldn't matter... Second, the person who placed the RESET key next to the RETURN key should be executed in COBOL (which is not a small planet with pyramids).

O.D. LENSMAN: I was introduced to the music of Jarré by a cousin of mine. I've found both Oxygene and Equinoxe quite enjoyable, though I find the latter a more unified composition, whereas Oxygene seems rather episodic. A friend of mine keeps offering to play some of Synergy's recordings for me; this may come to pass if we ever manage to sit down in the same place long enough...

How much 'classical' music do you have? I have a number of unusual compositions to suggest if you are interested. (At the moment, however, I am some 1000 miles east of my record collection and am unable to consult it.)

CHARMED: I feel deeply for you, Kid. The Sacrificial Lamb Committee did try to warn you, though...

THAT LAST PAGE: Geez, if that's how 'one shot' affects you folks...

POLES OF ORDER 2 -

SOMETHING ELSE, AGAIN!: Thanks anyhow.

IN THE SOLAR SYSTEM: Gee, Kid, only two problems? When I expostulate on these matters (as I am wont to do), I do not mean to suggest that I am working with firm knowledge (it's more sort of 'squooshy'). I am attempting to synthesize the thoughts of others on various aspects of the question of extraterrestrial life and intelligence, while tossing in some speculations of my own.

Nonetheless, I think that 'life-as-we-know-it' is all that we can sensibly talk about. I am certain that Nature has been far more imaginative than we at placing living things in all manner of environments. I am very nearly as certain that we will not recognize a lot of them as 'living'. I feel the Viking biology results demonstrate this: we are either seeing a life form so alien to us that we can't conceive of a proper test to decide if it's 'alive' or we are seeing a non-biological process no one happened to consider. How does one decide what is the case?

I hold out for carbon-based life because radio telescopes detect organic molecules in abundances essentially independent of complexity, while scarcely any inorganic molecules have been detected which possess more than two atoms. As soon as someone manages to measure the microwave spectrum of an amino acid, radio astronomers are ready to look for it...

The fellow in whose apartment I am writing this wrote his doctoral thesis on electromagnetic effects in the solar nebula. As far as I can learn, no one has determined what mechanism arranges the spacing of planets. 'Balance of electromagnetic and gravitational forces' is really a rather 'hand-waving' phrase... If you know of any papers on this, though, I'd really like to know about them!

* * *

I apologize for some of the sloppiness in this issue: I'm lost in a strange land and forgot to bring Liquid Paper. There's no room for a map this time, but look for Mars, Jupiter, and Saturn in the wee hours in the constellation Leo; you can't miss 'em! Happy Chanukah, Merry Christmas, and Happy New Year!

ALEXANDER'S
RAGTIME
BANDERSNATCH

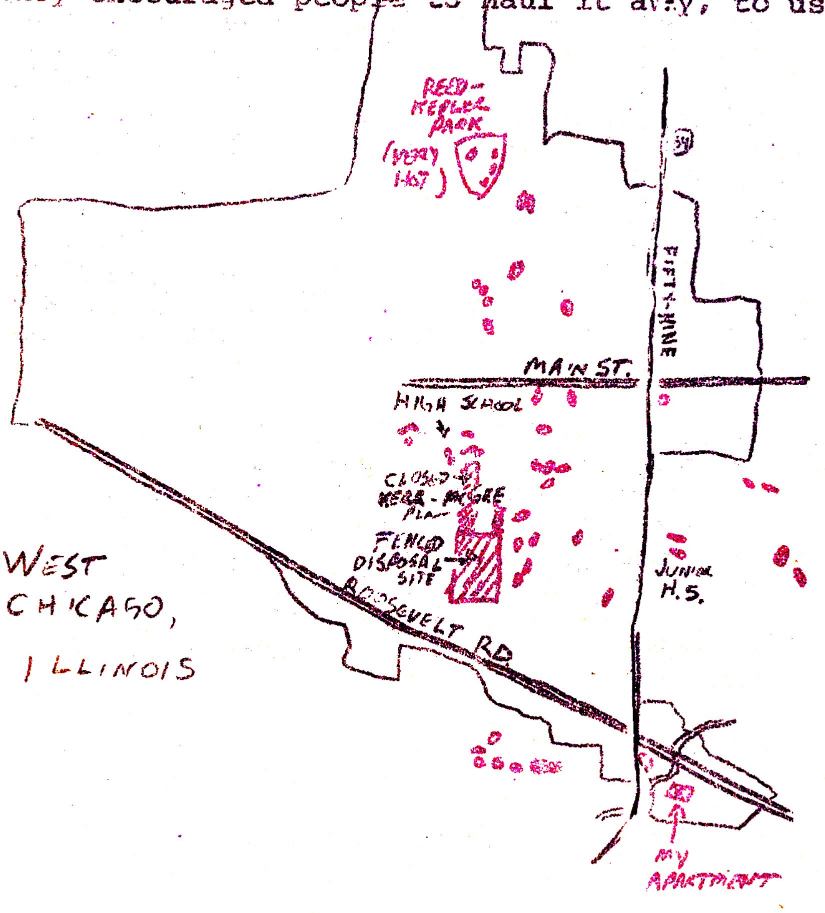
Published for Apa-Tech #4 by none other than Bill Higgins, aging boy wonder, now resident at 853 Lorlyn Drive, Apartment 1A, West Chicago, Illinois 60185. This is Spinthairoscope Media publication number Three.

++

West Chicago is a sleepy suburb about forty miles from ~~civilization~~ the Loop. Before I moved here it had only one distinction in my mind: the Fermilab neutrino beam passes through the town after leaving the accelerator site and before heading off into interstellar space.

I had heard talk of the thorium-bearing rocks under West Chicago, and the fact that people who take showers here breathe in more radon gas than uranium workers but never paid much attention to it. Then last week the Chicago Tribune published the results of an Argonne National Laboratory survey...

It seems that eighty or so years ago a plant in West Chicago refined thorium for usein the mantles of gaslights. You'll recall from your grade school class in nuclear engineering that thorium, one of the actinide series, is always radioactive , and even has a fissionable isotope or two. So after the folks at this plant got what they could out of the ores, they were left with big piles of sand which accumulated behind their establishment. Magnanimously they encouraged people to haul it away, to use as free landfill.



The result was that deposits of radioactive tailings were dumped all over the town, especially in public construction projects such as schools and parks. Argonne surveyors found 81 places where radiation was higher than background, including four that were hotter than the legal maximum for exposure to the general public. One of these was in Reed-Kepler Park, where children used to play often. The Tribune quotes a dose rate of 50 mrem/hour, but I find that hard to swallow, and I haven't checked up on it yet. Anyway, those kids playing in the park for years make a marvelous sentimental picture for those who are already terrified of radiation.

The thorium plant was acquired byKerr-McGee Corporation in the late fifties. In 1973 or so they shut down their operation and began to make plans, for approval by the AEC, for wrecking the plant and disposing of the radioactive parts of it. The plans are still under review.

Researchers began a statistical study of the plant workers, who had been exposed to a lot of contamination. I guess they were looking for abnormal incidence of cancer or something. What they found was that employees had over twice the average nuber of deaths by auto accidents, a huge statistical anomaly. However, those of you who followed the Silkwood trial will realize that death by auto accident is not unusual for employees of Kerr-McGee...

Well, the people of West Chicago have been living with loose radiation for decades now, and there doesn't seem to be any conclusion to this story. I wish it had some kind of moral or punch line. I wish those two thorium deposits weren't just across the creek from my place.

A couple of issues back, Steve Johnson suggested building a version of the MIT Mass Driver, an electromagnetic catapult which would be the key to large-scale space manufacturing. A few weeks later I met Dr. Henry Kolm, an MIT magnet jockey who supervised the team that built it. He was speaking at Fermilab on "The Prolonged Adolescence of Superconductivity." He showed a slide of Kammaerlingh Onnes in the lab where he discovered the effect in 1905. Then he showed a slide of Wilbur Wright and one of his planes in the same year. The point was that aviation has come a long way, but superconducting technology has not. In his opinion, it's way past Steamboat Time. In my opinion, there will be superconductivity hobbyists, in garages and basements, within ten years. (Always ahead of his time, Cap'n Al Duester has already located a disused helium refrigerator at Michigan Tech)

Kolm sent me copies of papers covering the design and construction of his gadget, and I sent them along to Steve, and announced the notion at Windycon. It looks buildable, and if we can squeeze out enough enthusiasm we may do it. But we'll need lots of help, with scrounging if nothing else, from other techies. Information will appear in your mailbox soon.

After 25 years of waiting, I finally saw Dan Story's print of *Fantasia* in Ypsilanti last weekend. It was every bit as good as it had been hyped to be--how often can you say that these days? It does sadden me that nothing comparable world-shaking has been made in the thirty (forty?) years since. Only *Yellow Submarine* came close to exploring as much of the potential of animation. Maybe computers will make it easier, and masterworks are just around the corner. (Greg? Valli?) (And where is Jerry Hansel's magic video board? Where, for that matter, is Jerry?)

Speaking of fims[who said anything about fims?] I also caught the trailer version of *Hyperdrift*. Clyde Jones and D.D. Tog, Esq. have labored mightily to give the world two minutes of space opera. My main reaction is sheer envy; not many of us get a chance to carry out our dreams to this extent. Armed with a miniscule budget and hogsheads of class, stretching a whole lot of talent as far as it will go, they have brought their little ~~ragtag~~ fleet of starships to life. They've worked miracles with odds and ends of junk (why else did God make techies?). Lots of Chicago and Milwaukee fen acted in the film, somestimes for endless retakes. Costumes, props, computer animation, sets, and Clyde's beloved miniatures looked marvelously *right*. I was most impressed.

The idea, as I understand it, is to apply for a grant to the American Film Institute, presentig the carefully edited trailer as evidence of what D.D. Tog can do. They hope to get enough money to make a 20-minute film of their *Hyperdrift* script, with the possibility of extending it to feature length still a gleam in their eyes. They won't know until February if the grant comes through, but we're all rooting for them. Maybe they'll need another spear carrier...or a model builder...or some ukelele music on the sound track...Meanwhile, I continue to keep an eye on interesting stuff in the Fermilab dumpsters.....

I might as well mention that "Home on Lagrange (The L-5 Song)" has now been published by Ace in Jerry Pournelle's anthology *The Endless Frontier*. I haven't got a copy yet, so I can't review it, but it would be nice if it sold Thousands and Thousands of Copies; Barry Gehm and I might make enough for a whole tank of gas. Between us.

At Conclave I was aghast to find a Saturday morning panel called "The Bill and Barry Show...if neither shows up, the Bill and Barry Didn't Show." I phoned Barry in East Lansing Friday night, leaving a message with his roommate, the amazing Mike Brandl. Saturday I walkdededed into the panel room with great trepidation. Fortunately Mary Anne Mueller, of Columbus, had been instructed to cover for us. She was trying to write her Fan GoH speech. So we conducted a round-table discussion with the audience on what she should say. Half an hour into the panel, Barry burst into the roomm, at the end of a maniacal drive from the capital. We had a lot of fun, but didn't help poor Mary Anne much, I'm afraid. The high point was when I somehow managed to play the theme from "The Twilight Zone" on four water glasses. The assembled fen applauded.

THE FABLED LOCH NESS BANDERSNATCH
(ARTIST'S CONCEPTION)

Misha Sestak--Got a computer yet? Your (hypothetical) copies of PFC Landsat output would make a nice apa cover. Maybe I can screen and Xerox a B&W one if you send it to me. Good cartoon.

R--Three inches of text and three pages of MCs? How faannish.

Rod--What about a supersonic model rocket launched from the Midwestern Mass Driver? /Bucket coil should have plenty of current left for ignition after leaving the launch rail. Think about it, but I wouldn't hold my breath until the MD gets built.

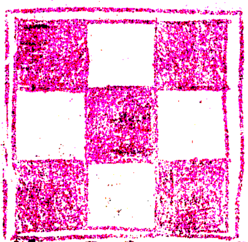
Greg--The distribution of supernovae won't be random if somebody is setting them off on purpose. (How would you do that? Could it be as simple as dropping a planet's worth of Z in?) Arthur Clarke has a comment ont this--dammit,where? _Partly Baked Ideas?_

Clyde--Did you really leave out _Blows Against the Empire?_

Keith--I must take issue, if only out of self-respect, with your remark: "To get anywhere [in physics] you need a doctorate..." I don't feel inclined right now to give arguments; perhaps another time. Possible non sequitur: At least one of the guys getting the Nobel in medicine this year does _not_ have a doctorate, not even in medicine.

Words to "Benson, Arizona", as well as to lots of songs you weren't wondering about, will be published in the GT filksong book Mary Lyn Skirvin is editing. _They Don't Write 'Em Like That--Yet_ will be available by Isshercon.

Trivia Buffs and _Alien_ Fans: There are many references in the movie to "the Company," which owns the ship and financed the expedition. Have you wondered what Company it is? Wouldn't you expect to see its name or logo in the background, like in _2001_? On almost every door in the _Nostromo_ this design appears:



This is the logo of the Ralston Purina Corporation. Case closed.

Late Chambanacon Notes: Tim Kyger retains his boyish good looks after his stint as Iguanacon chairman. And Ross Pavlac appears not to bear a grudge. Tom Barber and Uncle Dan Story are putting together a couple of cons next year, quite independent of Detroit in '82. (What about that Houghton bid?) Are Alice and Mike still in the closet? Will Dick Smith get evicted? Where is Karen Trego? Will Alex escape from Kalamazoo? What are Chip and Leah up to? Will CHUSFA find someplace else to keep their collection, or will the Office explode? Will Todd, Clyde, Bill, and heaven knows who else build a Dykstraflex? Will _The Number of the Beast_ win a Kilgore? Will Otrag fly again? Will Roper send in his stamps? Will I ever finish all these cartoons? Am I running out of ditto master?

Hi, there, sports fans (well, some kind of fans, anyway). I warn you now, this my first attempt at apa-ing, so this is just written

OFF THE TOP OF MY HEAD by Doug Van Dorn

Now that naming the piece is done, we can get on to more important things.

I have been known to sling a few film reviews in my time, so I'll start out with a look at sf and other films released from Dec. 1, 1978 through Dec. 1, 1979, giving bests, worsts, etc.

All things considered, I'd have to give best film to Superman, with Alien a close second.

Bear with me here. I put Superman first because it has a large number of high points, including Christopher Reeve's acting, the absolutely stunning cinematography by Geoff Unsworth, the superior John Williams score (possibly the best score of the year), the well-done flying effects and the good directing.

But, more than all these, I have to give high points to Superman on an emotional level. I have seen the film several times, and it has rarely failed in making me feel better than I did when I went in. In a very similar sense to Star Wars, the Superman film makes me feel anything is possible. Walls are never too high, no problem is ever too great.

Yes, I realize the problems of the film, I see the separate natures of the first third, second third and last third of the film and have a lot of trouble swallowing the old "turn back the world" bit. But, when you're Superman, make it didn't happen may not be such an impossible wish.

-more-

I fervently hope the personalities that delayed the release of this film and nearly detroyed it won't tremendously screw up the sequel. And what's this I hear about Marlon Brando demanding tights and a great big red 'S'. . .?

On to Alien. I loved it, thought it was the best blending of the sf genre and any other genre I have ever seen. The film was very tightly paced, well acted (for the most part), fairly credible and a few steps removed from the B-movie monsters it threatened to emulate.

What I didn't like was the glopping together of a few story points and the entire omission of the cacoon scene, when Ripley finds Dallas in the process of being converted to Alien eggs (on your toy store shelves for X-mas, folks!). When I read good ole Alan Dean's novelization, I thought that scene was the height of the horror, completely unexpected and chilling in a vast, nonhuman way. Leaving the intimation being the alien was merely eating our intrepid slobs scarcely makes the basic premise any better than a couple of Space:1999's I've seen.

Also, though I found Jerry Goldsmith's score up to the mood of the film, it doesn't stand on its own as a musical entity, which most of Williams' sf scores tend to. (And, yes, I include the Superman score when I say that.)

Getting on to others, Time After Time was a nice piece, even better when you realize it was writer Nicholas Meyer's first film. He wrote the screenplay, oversaw the shooting and did the editing all by himself.

The story was not too bad and full of delightful looks into our time by a man of the past. (I especially liked the comments in the film about the mayor of Columbus, Oh. being assassinated.)

-more-

The time machine itself was a bit silly, if you ask me, using solar power at night in a basement, and would have better been left as FM, or friggin' magic. The pseudo-scientific explanations of how it worked, explained by a man whose time never even considered such things as high-energy physics, was out of place and bothersome.

But, used as a device to move the plot and not the passenger, the machine worked very well. All in all, congrats are in order for Meyer, and I for one will be very interested in seeing what he comes up with next.

Since my time is limited, I will now go on to the worst films.

The winner of this category has to be AIP's Meteor. I heard several rumors they were forced to scrap all the effects three months before release and shoot new ones. I don't believe it. The effects were so shitty it's impossible for the previous ones to have been worse.

I'm serious. Case in point: for those who don't know what an anamorphic lens is, it's what they use to put that wide-screened picture on basically square film frames. It squeezes the image being shot. The picture is then projected through a stretching lens, always at the theatre, to fill the wide screen and restore the squeezed (Squoze?) people to their original proportions.

Every single shot of the meteor, the first shots of the Skylab model (meant to be a Mars manned mission) and the from-behind shots of the comet that turns an asteroid into THE METEOR have been shot with A NORMAL LENS. This means, folks, that the picture you see on the screen is stretched out of proportion. It looks silly and, to my knowledge, hasn't been done in a major motion picture since the wide-screen process was invented.

-more-

On top of that (as if it wasn't bad enough), add bad acting, bad writing, medioc~~h~~re music and a virtually unlimited amount of pure, unadulterated scientific bullshit, and you have the worst sf film of the year and, perhaps, the decade.

My other nomination for worst film, though it takes itself less seriously, is Starcrash. All I can say for this spaghetti space opera is it should be seen with a large group that likes laughing at the film or at a drive-in in a station wagon with a very good friend of the opposite sex. In other words, at some points you really need a diversion to keep from getting totally bored with this one.

For next time: some looks at the ST film and at what might make Walt Disney go 5,000 rpm in his grave--The Black Hole.

Until then, watch out for falling bombs--I mean Meteors--no, I said it right the first time.

Doug Van Dorn

Dr. Gonzo's Eclectic Emporium   November/December 1979

(purveyors of the exotically eccentric and exuberantly effervescent)

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[621 Hull Terrace, #1W, Evanston IL 60202 and no cat *sigh*]

It was a dark and stormy night. The chilling winds of vast snowy wastes were emerging from sublimal suppression. Contemplation of their imminent arrival were making the most hardy of fen shiver; withdrawal from reality was an attempt at survival, not diversion. Snow had not made its deceivingly innocent appearance yet, but the weight of isolation and retreat sunk heavily into the spirit.

Could fen imagine a more sadistic notion than a con in Chicago in January? Hm, well this nonsense that we call I-Con and Chambanacon certainly is not much of an improvement. Just waiting for the winds to howl and flakes to descend has GOT to be sadistic.

All right, on that decidedly warm and cheerful note, let us proceed. First, some thank-yous are in order -- Dick, I know that zines are personal responsibilities and what you think of that, so thank-you all the much more for the time and access at DL, and your time and access; (*sigh* we all cannot have things perfect, eh??); Chicago fandom for such commiseration and all of the rest, well, what more can be said than fandom is taking over my life?

Further Adventures in the Reconciliation and Combination of My Life, or What Do Photography and Apples Have in Common?

I tried, I really tried, but enough is enough. Presently, I am maintaining my environment in audiovisualdom and just taking a breather from the interminable negotiations of the past several months. I am not forsaking my interest/fascination/love with micros for those perverse devices of audiovisualdom. Just trying to keep from bouncing between options for a while, and sit breathing calmly. A conflict between my worth personally and my worth as seen by "others in authority" is just too difficult to settle now, so the matter rests. More as it develops (of course, would I spare you the lurid details??)

Con Report Time, or Oh, No, Not Another Tucker Story!

CouleeCon: ZZZZZZZZZZZZZZZZZZ*ohmigod I blew the first night away*oh well* sightseeing across the Minnesota border*crossing the Mississippi*now I know why I like Minnesota so much*an absolutely breath-taking view of the La Crosse valley*Chicago is flat*if this is CouleeCon, this must be Saturday night* er, no, this is Sunday morning*sometimes I guess my body prefers to forget* later Sunday, well, I guess I want to be a techie, but cars do get boring after a while*thank you, Robin, and good luck in your new apt.*believe me, bear rugs are NICE*Monday, an unplanned holiday, but LaCrosse is a walkable town, nice even*well, Chicago again.

I-Con: WindyCon was a LONG time ago*sigh*everyone has been unseen for so long*almost seems catch-up time with talk and other things*I really don't know what/why/how it happened*suddenly a web of silk is spun*a web to comfort or to insulate?*some things/a lot of things/all things are better left unsaid for a while*but thank you.

[Interim note: long week]

ChambanaCon: all right, I am home again*now, this con is like NASFiC* finally everyone is together again*and I know them, mostly amazing*sigh, but ZZZZZZZZZ, blew Friday night away again*wandering around at 1:15 AM pissed at self for missing all sorts of good goings-on, and yes, I am actually at this con, people*but ok*Saturday is a cheap place for a haircut*vague hellos and conversation bits and pieces overheard*some Chinese restaurant in Rantoul that fandom took over*taffy bananas-decadence personified in food*Jacuzzi-decadence personified in water spirits*suddenly ZZZZZZZZZ*Sunday afternoon* sigh*leavings and poker games and neverending rain*don't wait so long until I can see you all again.

Mailing Comment Dept., or Please Go Back and Read the Above If You Have Jumped Ahead This Far After You Are Through (*chuckle*)

Something Else Again! What can I say except that you have a captive audience of at least one when you decide to play your guitar? (One of these days I will get Motie Engineers out of my blood and stop that silly tune from running around in my head....)

Young and Abroad! Good luck with Texas. Don't grin too gleefully at us northern fools in January.

What is the Sound: Is the house painted yet?

Transporter Topics! Cloud cause? Quick, I am breathlessly waiting for an answer.

Quintessential Singularity! What type of television sets were with the Apples? I have from some source that Sony Trinitrons work best for graphics, but RCA or Panasonics are best for alpha-numeric displays.

Smith's Corona! What will you do once the editor is perfect, or what are you doing in 20000 AD?

Olive Drab Lensman! If I ever want/need/desire a high-quality version of S.W./C.E., thanks.

Tales From the Charmed Sea! Better Charmed, than Stranged. Life of Brian made me fall asleep, but a catchy tune.

The One Shot! Is it true? That we are all techies, and we have no....?? NOBODY WARNED ME!!!!!!

With that, life is back on a gentler keel, my friends all are keeping themselves and me well, and I will grin decadently (couldn't go without that word at least once......)
Good snow season, Solstice, Christmas, Festival of Lights.......

Gleanings From the Dustbin
#1

Being a contribution to APATECH#4 by:

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Hello. Seeing as this is my first contribution to APATECH, allow me to give you a short autobiography.

I was born in a small suburb of Chicago called Mount Prospect on November 23, 1958. With time off for good behavior, I spent most of the next nineteen years there. Then my family moved about two miles due north to where I am today.....

At an early age I discovered the children's section of the local library. It had a fairly good selection of books, which nevertheless didn't seem to last me very long. After finishing off all the Danny Dunns and Tom Swift Jr.s, I read everything else having to do with science fiction or space travel. I started on the harder stuff at the age of eleven, when(after seeing the movie) I checked out a copy of Clarke's 2001 hoping to decipher the last few scenes. I then went on to spend the next several years exploring the remainder of that library.

About the same time I ran out of books, I also ran out of high school. I had been working with the local school district's time sharing system throughout my high school years, so I decided to make that my major. I entered the University of Illinois at Champaign-Urbana in the fall of '77, and discovered fandom. I joined the local science fiction association, and allowed myself to be dragged to Windycon 4. Following several friends, I inadvertently ended up at a GT meeting. After listening for several minutes (I couldn't do anything else, it was too loud.) I decided to send in my stamps. As I went to more conventions, things rapidly degenerated to the point where I found myself faced with the option of voluntarily leaving for a while, or getting kicked out. I exercised my option, returned too soon, and was kicked out anyway. It isn't really all that simple. Anytime you feel like being bored stiff, ask me about it. I may not know the reasons for absolute certainty myself, but I have some dynamite theories!

And that about brings me up to date. I currently live at the above address with my parents (you call this living?). I have just finished a job with a small construction company writing business software for a TRS-80. Don't ask. I am also about to embark upon a concentrated effort to get myself readmitted to U of I. This will probably take about a year to a year and a half, so my address is going to be constant for the foreseeable future.

And now for some random notes from all over. One of the advantages to being temporarily at leisure is that I find time to read all sorts of magazines that I would be hard pressed to find time for.

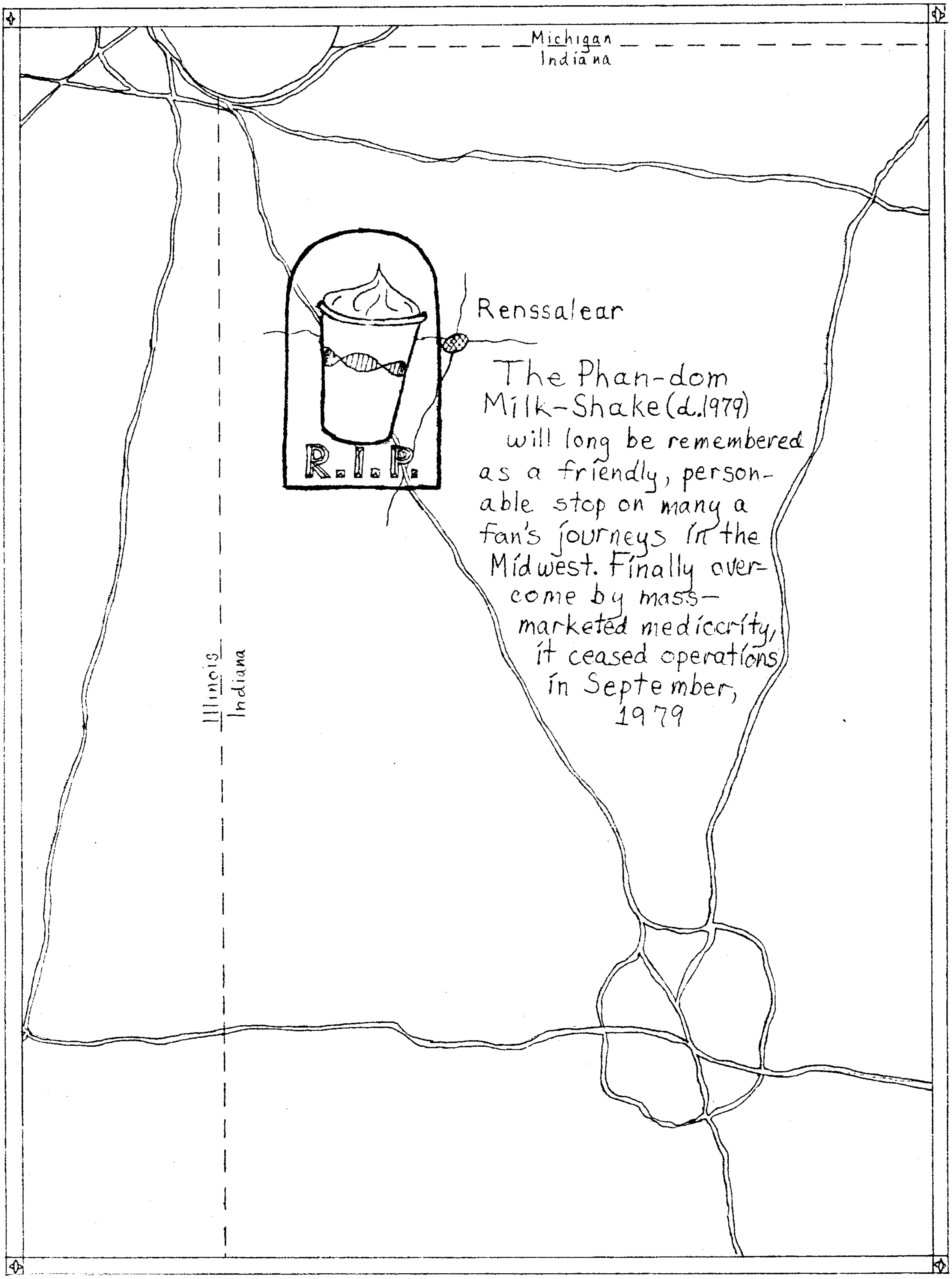
For example, an item that appeared in Computerworld about three months ago. Video disks for computer data storage are finally here. A single disk will store $2x10^{10}$ bits, and has an access time of about .1 seconds. The data will be inscribed on the inside of a plastic sandwich to protect it from handling. Just what every microcomputer needs, huh? Unfortunately, each disk will cost around $150, and the device itself will initially be priced at $150,000. If all you need to do is play back pre-recorded programs, however, it will only cost you $20,000...

I'm told that Bentley mentioned the Sharp 5100's liquid crystal display in here a while back. Well, in the Nov. 22 issue of Electronics magazine, Exxon announced another one of their subsidiaries, Kylex. (Exxon has enough companies to go out of the oil business by now...) This one makes liquid crystal displays. Their first offering is a fourty character, 5x10 matrix display that works on 5 volts, and costs $299 in single lots. (for 100, the price is $199 apiece)

About a week before that, in the same magazine, a French research group announced a two centimeter square display, 256x256, with 32 gray shades, which can change to a completely new image 10 times a second. They say that if they can speed it up by a factor of three, it will be practical to use a larger panel for television.

Of late it seems the toy industry is being increasingly taken over by techies. The next generation of Star Trek phaser pistols, for example, incorporate infra-red LEDs so that a direct hit will disable the other guys weapon. There is also a series of space ships from Milton Bradley that also fires an infra-red beam, and is disabled after hitting a reflective target. Several toy vehicles which can be programmed for their motions are available for about $40, and there is even one which is voice controled (I haven't seen this one yet, but it was originally supposed to come out last christmas, so I should hope its debugged by now...). But best of all is Microvision by Milton Bradley. This is a handheld electronic game with a LCD board and programming cartridges. It comes with a version of breakout, but 6 other cartridges are available. It lists for about $50, but I've seen it on sale for $35. The cartridges cost about $16 each. I've actually used one of these, and its good. The unit I used had minor defects so there may be some quality control problems.

Well, thats about it. Have a merry christmas, and if I don't see you before then, a nice New Decade.



The Phan-dom Milk-Shake (d.1979) will long be remembered as a friendly, personable stop on many a fan's journeys in the Midwest. Finally overcome by mass-marketed mediocrity, it ceased operations in September, 1979

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